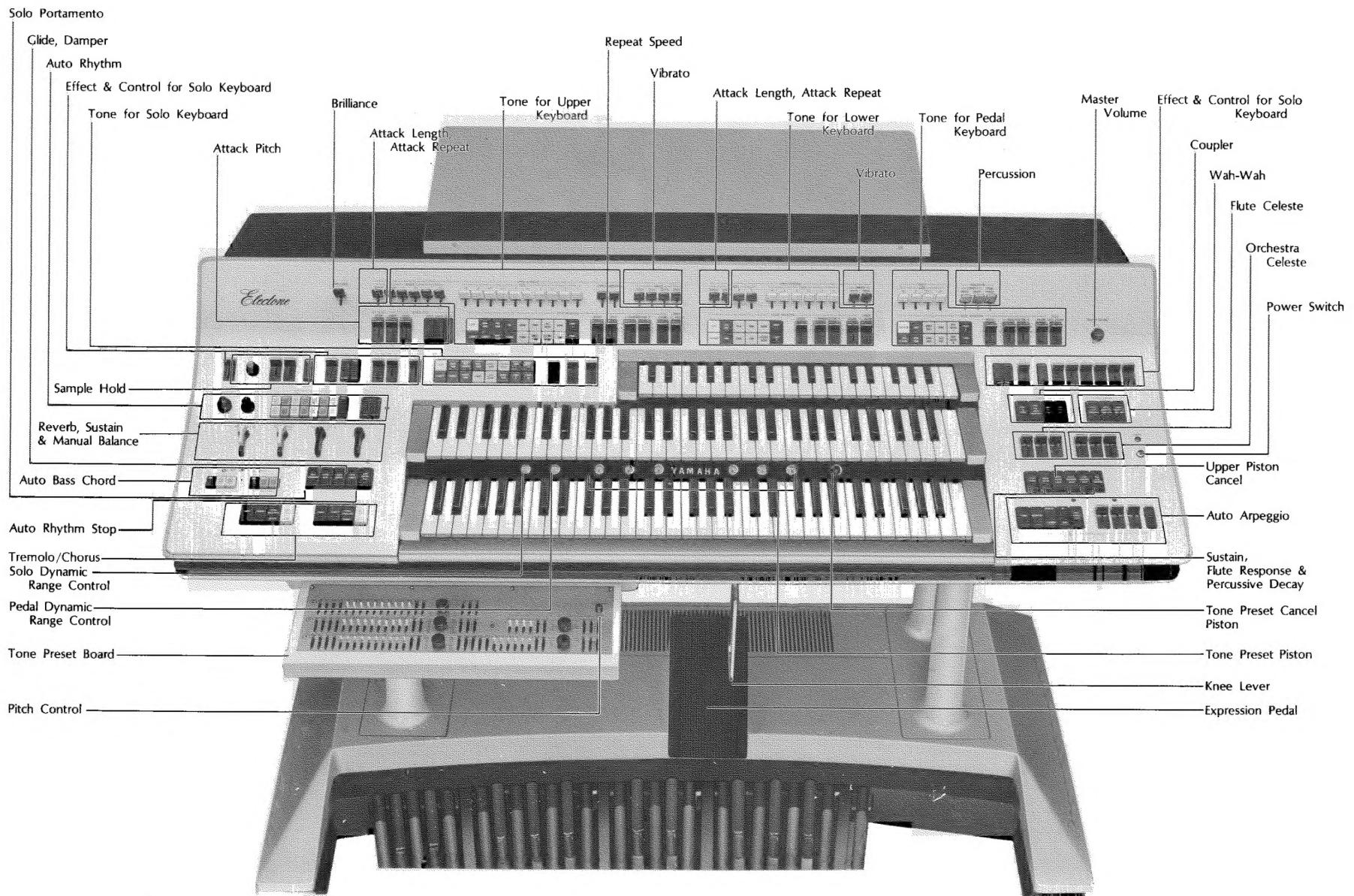


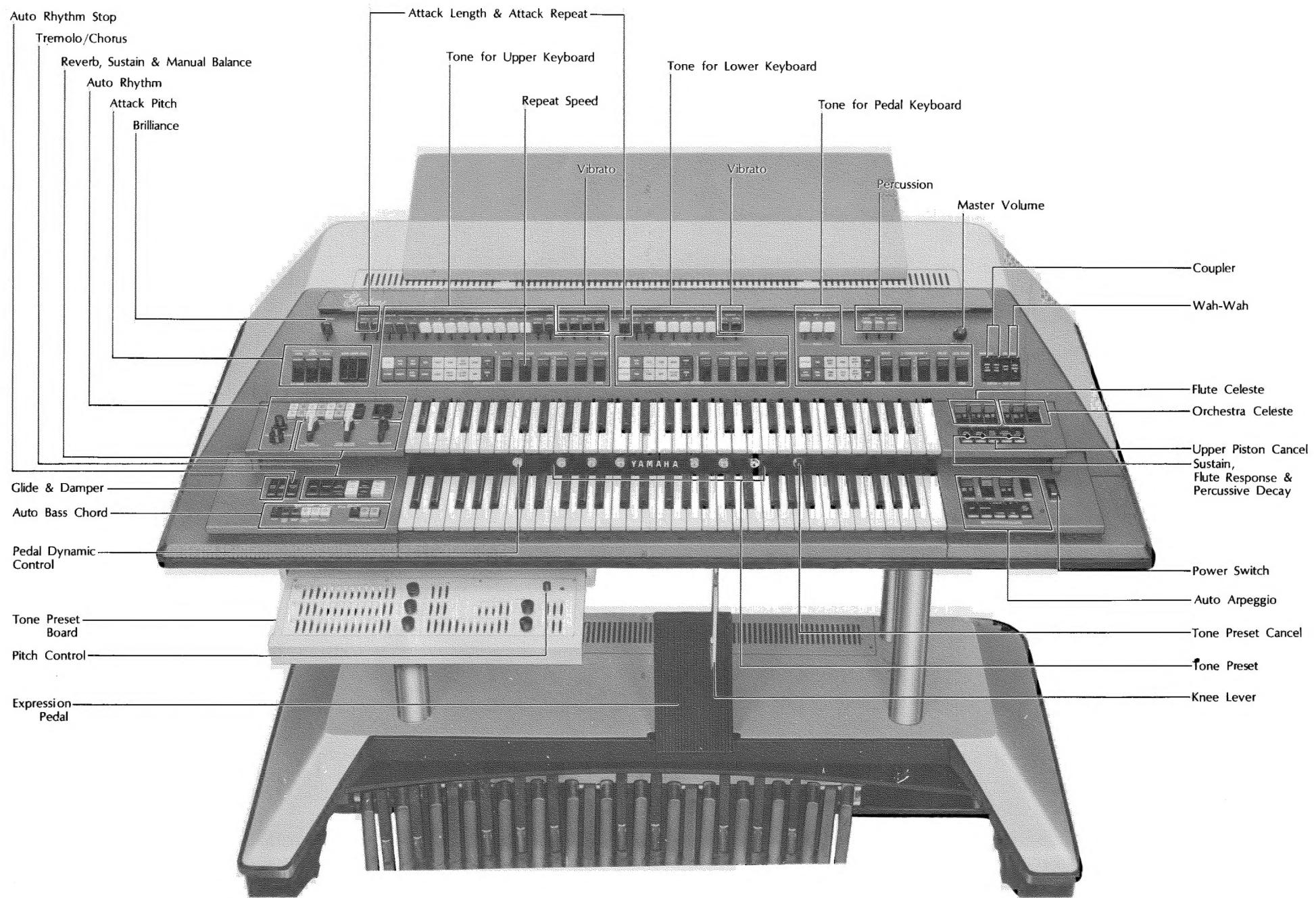
**GUIDE TO YOUR YAMAHA ELECTONE**

# **EX-1, EX-2**

# EX-1



# EX-2



# YAMAHA ELECTONE PAS System EX-1•EX-2

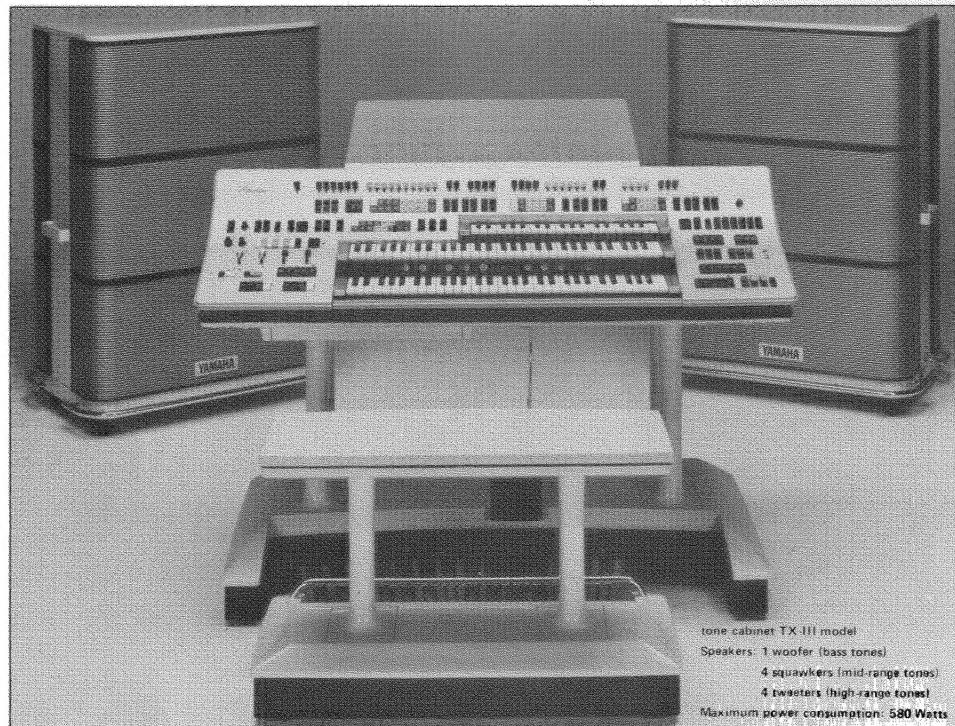


Photo shows EX-1.

The Yamaha EX-1 and EX-2 are the utmost sophisticated professional electronic organs and have been developed through Yamaha's many years of experience in the musical instrument field and electronic technology.

We are confident that the unique sound of these instruments will meet even the most exacting demands of players. Before operating the electone, read this manual carefully to familiarize yourself with all the unique features of the instrument, keeping it at hand for future reference.

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# What is the PAS System (Pulse Analogue Synthesis System)?

## Pulse

Pulse signals are widely used in computer technology. Adapted for use in the Yamaha electone, they accurately process complicated information sent from the keyboards such as musical intervals, tonal intonation etc. This technology, besides permitting direct sound to be produced, has also made it possible to simplify complicated circuits.

## Analogue

Musical intervals and intonations sent from the keyboards are converted into analogue signals corresponding to the sounds of particular musical instruments. This is the source of clear flute or dynamic orchestra sounds.

## Synthesis

The synthesizer delicately changes tones with the passage of time. Yamaha has successfully incorporated this technology with orchestra sounds to give a vivid, dynamic effect. This has resulted in surprisingly natural and realistic sound.

## System

The successful integration of pulse, analog and synthesizer electronics technology, has resulted in the development of the Yamaha Electone PAS System. Even though all these outstanding functions are housed in a single unit, it truly deserves its description as a "System."

## Caution—Read the Following before Playing

Always treat your Electone with the same care you would any fine musical instrument.

The following points are suggested to ensure the best performance of the Electone.

### 1.

Check for correct power voltage. Consult your Yamaha serviceman regarding any changes. As to the British-Standard model, information is provided in 'Specifications' on the last page.

### 2.

Never touch the inside parts.  
No user servicable parts inside.

### 3.

Always turn the power switch OFF, when Electone is not in use.

### 4.

Clean keys, etc., with a damp cloth only. Never use chemical solvents such as benzene which may damage the finish.

### 5.

Keep the Electone in a position away from direct sunlight, excess humidity and heat to protect the cabinet finish and joints.

### 6.

Do not hit or scratch the cabinet with a hard object.

### 7.

The Electone may cause interference to a TV. or radio set if they are located too close. Keep the Electone at least one meter away from such appliances.

### 8.

Do not place any heavy object on the instrument.

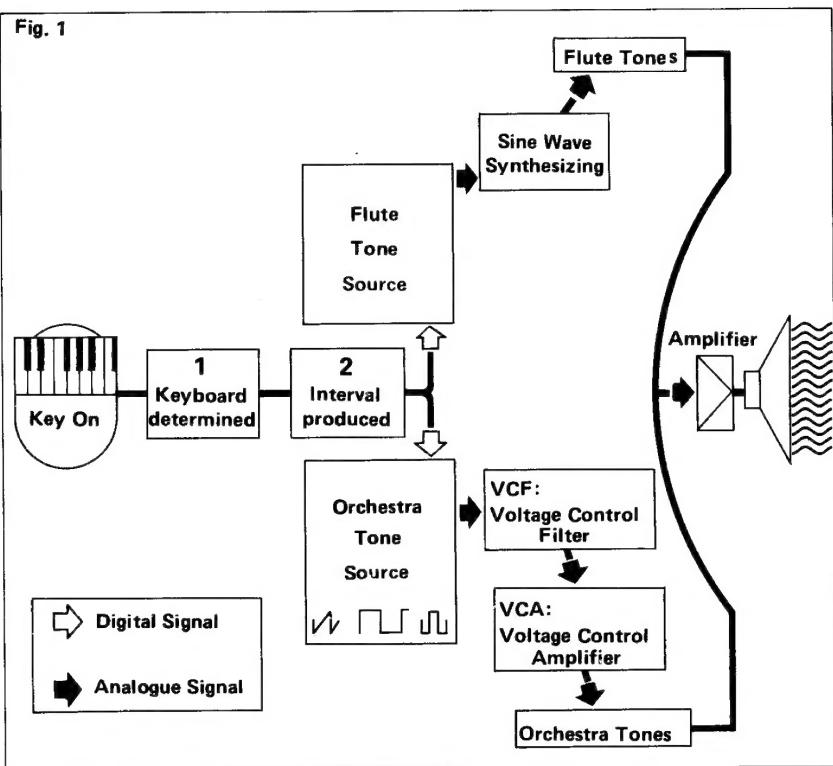
# Rich Panorama of Sound

## Blending Living, Natural Sound . . .

The original sounds of the violin, piano, trumpet etc., by the time they reach our ears, undergo delicate changes in musical intervals, tone, and volume, in the process of rising, leveling off and falling. These, along with time change, play a very important role in the characterization of the sound of each musical instrument.

With the Yamaha Electone EX-1 and EX-2, this "sound life" is fully incorporated in orchestra tones. Yamaha's special system to time control tone and volume has been utilized to realize natural, living sound. Flute tones controlled by the tone lever system are a product of digital technology which ensures highly accurate transmission of data. Purer and clearer flute tones than in conventional instruments can thus be achieved.

Fig. 1

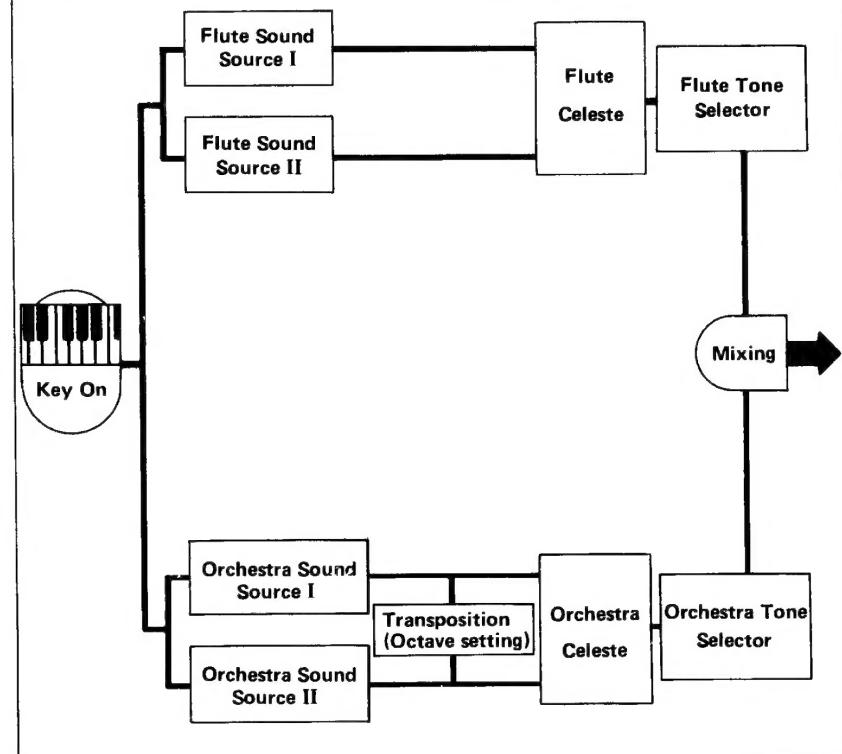


## 2 Systems Sound Source ... Sound with Greater Depth.

In addition to this unique sound generating system, a prominent feature is that the Orchestra and Flute tones of the Upper, Lower and Pedal Keyboards are composed of 2 systems of sound sources of completely similar nature respectively. For instance, when one key is depressed, sounds generated from two sound sources are duplicated to produce a deeper, richer tone (Celeste effect) and further width and depth are added to the tone since these 2 systems sounds are shifted by octave using the Transposition function (orchestra tone only), etc.

The EX-1 and EX-2 Electones are thus truly unique and outstanding instruments, capable of creating natural, living sound.

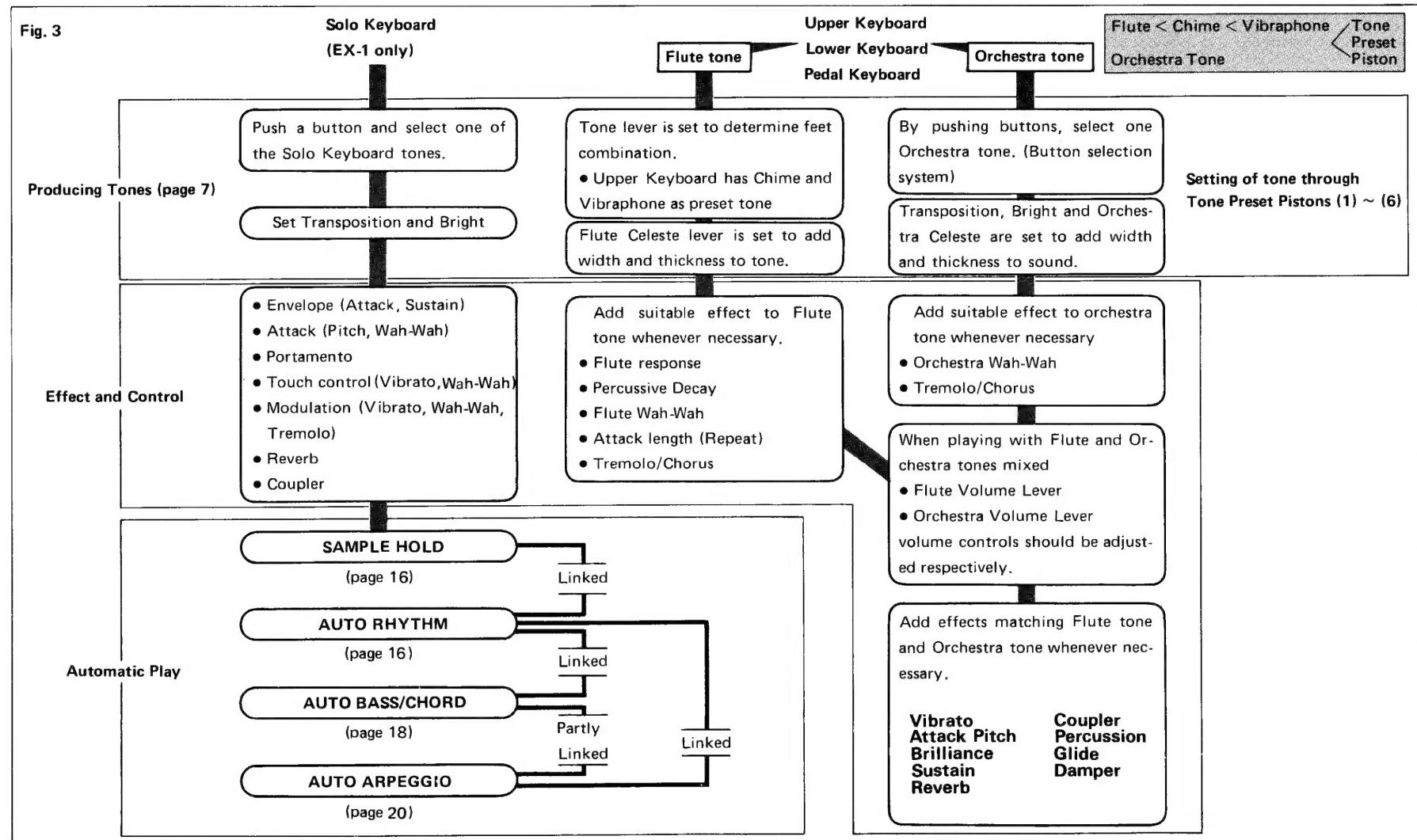
Fig. 2 2 Systems Sound Source (Upper, Lower Pedal Keyboards)



# Basic Sound Creation

The Yamaha EX-1 and EX-2 Electones are provided with 2 tone settings, the Flute Section (Tone lever type) and Orchestra section (Button selection type) for the Upper, Lower and Pedal Keyboards. In addition, the EX-1 has a Solo Keyboard mainly for playing melodies.

- Note: Flute and Orchestra tones can not be produced unless Flute Volume and Orchestra Volume levers are set.
- With the EX-1 and EX-2, the priority of sounds is predetermined as shown in the lower. For example, even if the Flute tone lever is set, Flute tone is cancelled when the Chime lever is depressed.



# Producing Tones

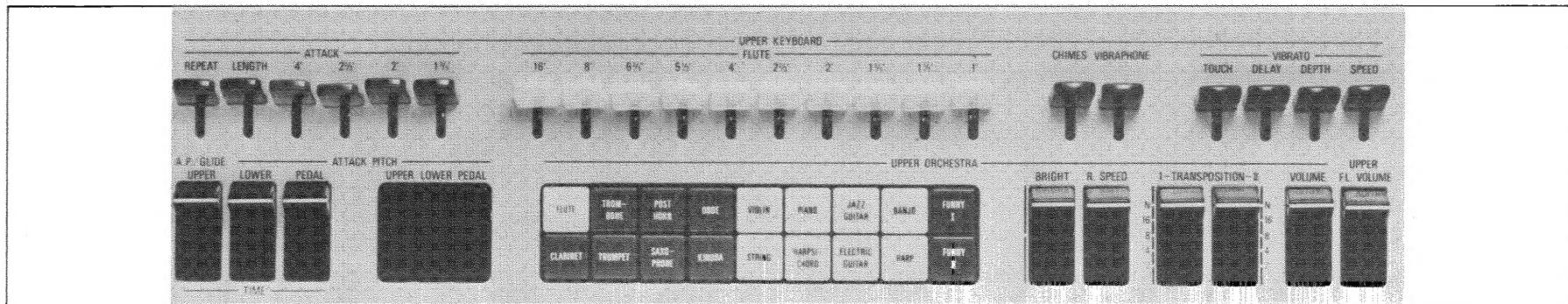


Photo shows EX-1.

## Producing Upper, Lower and Pedal Keyboard Tones

Each keyboard is provided with two types of tones, Flute tone (Tone lever system) and Orchestra tone (Button system). Accordingly, the playing method is classified into 1) Flute only, 2) Orchestra only and 3) Flute and Orchestra mixed. The method of producing sounds from each keyboard is basically the same. Mixing and Volume control is performed by the Volume lever.

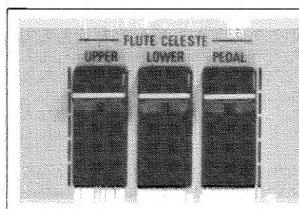
### Flute tones

**(1) Set the Tone lever and Basic flute tone will be produced.** To increase the volume, move the lever towards you. Note that the preset tones of the Upper Keyboard, Chimes and Vibraphone, cannot be mixed with the other tone levers (When set simultaneously, the preset tone takes precedence. In the case of Chimes and Vibraphone, the latter has priority.)

### Example of Registration

- Solemn pipe organ tone is obtained by setting Flute Celeste after positioning all flute tone levers.
- When Attack tone of 2-2/3' is added to the sound structure including Flute 5-1/3' (example: Flute 16' + 8' + 5-1/3'), sparkling Jazz organ tone is obtained.
- When Attack tone 2-2/3' is combined with Flute Celested tone levers a "Chiff" effect of the classical organ is created.

**(2) Now set Flute Celeste lever.** Celeste has the effect of deepening and adding body to tones by fractionally shifting the pitch of two sound sources. Flute tone produced by setting the Tone lever can add a deeper, richer tone with the help of the Flute Celeste effect. For example, a Flute ensemble of several players will produce a richer sound than a soloist. Flute Celeste can add such an effect to Flute tones. The Flute Celeste lever has four settings (light touch click-stop) and can be reproduced by the Upper, Lower and Pedal Keyboards. The Celeste effect is increased by moving the lever towards you.



### Note:

- When preset pistons ①, ②, ③ or ⑥ is pushed, the Upper, Lower and Pedal Keyboards is converted into the preset registration. When either ④ or ⑤ is pushed, the Upper Keyboard tone will be converted into the preset registration. The Upper and Lower Keyboards have a total note capacity of 11 flute tones simultaneously.
- The Flute Celeste and Tremolo/Chorus effects do not apply to the Attack tone.



## Orchestra Tones

- (1) Set one of the Tone Selector Preset buttons. The tone you select becomes the basic orchestra tone (only one preset button may be set at a time). For some musical instrument sounds, "footage" has been preset in the following way; (When Transposition Lever is positioned at N.)
- Preset footage (according to feet expression)

Upper Keyboard	Flute (8') Trombone (16') Post Horn (8') Oboe (8') Violin (8') Piano (8') Jazz Guitar (16') Banjo (8') Funny I (8')	Clarinet (8') Trumpet (8') Saxophone (16') Kinura (8') Strings (8') Harpsichord (8') Electric Guitar (16') Harp (8') Funny II (8')
Lower Keyboard	Flute (8') Trombone (8') Cello (8') Piano (8') Guitar (8') Funny I (8')	Diapason (8') Horn (8') Strings (8') Harp (8') Electric Guitar (8') Funny II (8')
Pedal Keyboard	Diapason (16') Tuba (8') Bowed Bass (16') Piano (8') Bass Guitar I Funny I (8')	Bass Clarinet (8') Trombone (8') String Bass (8') Solid Bass (8') Bass Guitar II (8') Funny II (16')

- (2) Set Transposition I and II. As mentioned above, Orchestra tones have been set and predetermined pitch in footage. The Transposition shifts the pitch by one octave. As there are two Transposition levers, it is possible to set the levers I and II at separate pitches and then to combine them. This is similar to combining the 16' tone lever with the 8' tone lever, for instance, in setting the Flute tone.

- Relation between lever setting position and sound feet

Lever setting position	Sound generated	In case of trombone with Upper Keyboard Orchestra tones (Preset pitch at 16')
N	The pitch preset in Orchestra tone is generated as it is.	16' sound is generated
16'	16' sound is produced	16' sound is produced
8'	8' sound is produced	8' trombone tone
4'	4' sound is produced	4' trombone tone
2'	2' sound is produced	2' trombone tone

(3) Now set the Bright Lever. Bright lever is usually set in the center position. Moving the lever towards you produces bright tones, while moving it away from you gives a darker tone color. Changing the position of this lever has a marked tonal effect, so it is best adjusted a little at a time.

- (4) Finally, set the Orchestra Celeste Lever. The Celeste effect has been described in detail in "Flute Celeste" on page 6. However, in the case of orchestra tones, if there is a large difference in the range of the settings of Transposition I and II, the Celeste effect will not be as clear as with the Flute tones. This is due to the nature of the Celeste effect—the effect is best displayed between sounds having the same qualities (it is desirable that the sounds be within the same octave).

### Note .....

- For Orchestra section, 7 notes in total can be produced in the order that the key of Upper and Lower Keyboards are pressed.
- Regarding priority of Tone Selector, those facing you on your right and lower have precedence.
- If two notes are depressed on the Pedal Keyboard simultaneously, the higher one will take precedence.

### Producing Solo Keyboard Tones (EX-1 only)

Select one tone with the Tone Selector, set Transposition and determine final tone through Bright. Preset pitch of Tone Selector, classified by musical instruments as follows:

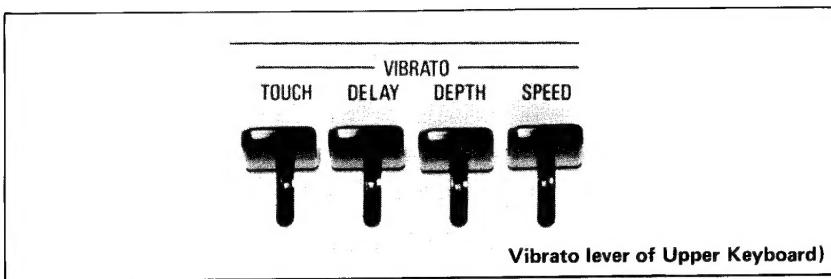
Flute (8')	Harpsichord (16')
Clarinet (16')	Jazz Guitar (16')
Trombone (32')	Electric Guitar (32')
Trumpet (16')	Double Reed (16')
Mute Trumpet (16')	Funny I (16')
Flugel Horn (16')	Funny II (16')
Saxophone (32')	Funny III (32')
Violin (8')	Funny IV (32')

# Effect and Control

## 1. UPPER, LOWER AND PEDAL KEYBOARDS

### VIBRATO

The following effects can be produced by using the 4 Vibrato levers (Lower Keyboard, Depth and Speed only).



#### (1) Normal Vibrato

This is the normal vibrato effect. The depth and speed of the vibrato are controlled by their respective Lever.

#### (2) Delay Vibrato (Upper Keyboard only)

Delay Vibrato is an effect whereby vibrato is delayed for a short time after pressing a key of the keyboard. This function is used to reproduce the delicate tones of such orchestral instruments as the trumpet and violin.

Delay Vibrato is operated as follows:

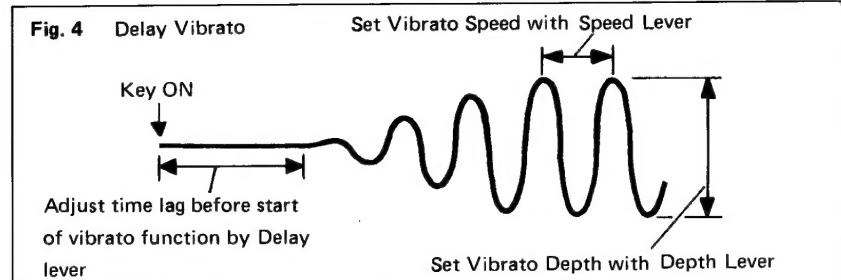
- First, set the Delay Lever.

This lever controls the time lag until the vibrato takes effect. Vibrato depth is also set at this time, only to the extent of 1/4 depth.

- Deeper vibrato can also be produced with the Depth lever. This lever is used when you want to increase the vibrato depth rather than just setting the Delay lever. However, position the lever at more than 1/4, since vibrato depth is increased more with Delay Lever.

- Set Vibrato Speed with the Speed Lever.

By setting the lever in the direction towards you, the vibrato speed will be increased.



#### (3) Touch Vibrato (Upper Keyboard only)

Touch Vibrato is produced by the sideways (lateral) movement of the fingers on the key, and the Touch Lever determines Vibrato depth. Therefore, Vibrato speed is dependent upon the finger speed.

If the Delay Lever or Depth Lever is even slightly pushed in, Touch Vibrato effect is cancelled. The Speed Lever does not affect Touch Vibrato.

Note-----

The following order applies for the above three types of vibrato:

Touch Vibrato < Normal Vibrato < Delay Vibrato

N.B (<: indicates priority)

### SUSTAIN, REVERB, MANUAL BALANCE

Sustain can be applied to Upper, Lower and Pedal Keyboards as well as 1'-16' flute tones. Manual Balance is normally left in center position and when turned in the right-hand direction, the Upper Keyboard melody will be emphasized accordingly.

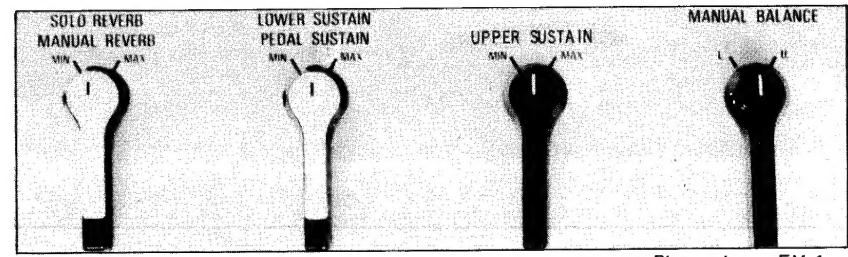


Photo shows EX-1.

## ATTACK PITCH

Attack Pitch is an effect which automatically lowers the pitch the instant the key is depressed and gradually returns after a certain period of time to its previous pitch. The degree of lowering of the pitch is preset by one semitone, and the return time is controlled by the Attack Time Lever. When the Attack Time Lever is not set, the return time is so rapid that the Attack Pitch effect is not distinguishable. The Attack Pitch can be used to achieve a funky pedal sound. Applied to brass sounds, their natural, rising effect can be accurately expressed.

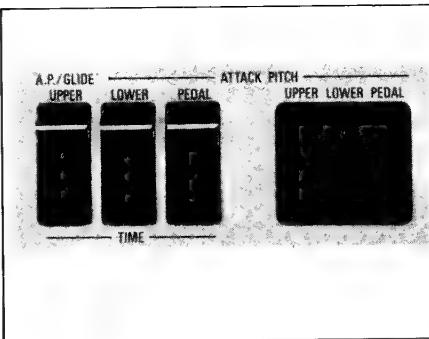
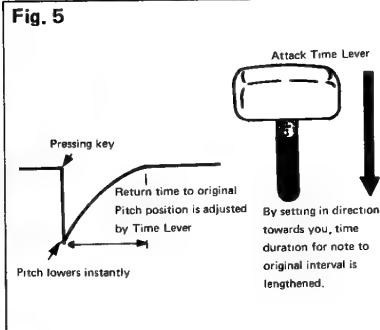


Fig. 5



### Note-----

- While Attack Pitch is employed, Vibrato effect will not be applied to Upper Keyboard.
- Attack Pitch effect will not function while Glide is set and Foot Switch is being operated. By pressing and then releasing the Foot Switch, Return Mode will be produced. When the key is released and then immediately pressed during return mode, it will then shift into Attack Pitch effect.

## ATTACK LENGTH, ATTACK REPEAT

These levers are located on the left of Attack tone levers and control the Attack effect.

### • LENGTH

This adjusts the decay time of the Attack note. The nearer the lever is set towards you, the longer the decay time becomes.

## • REPEAT

Attack notes will be issued intermittently by setting this Repeat Lever coupled with the preset Length Lever. As this intermittent sound is issued in the form of single notes, when another key is pressed, new Attack sound (intermittent) will start even if one key continues to be pressed.

## PERCUSSION

With this lever, lively percussion instrument sounds can be mixed with the notes of the Lower and Pedal Keyboards. A 3-stage click-stop system is employed (stopping when a response is felt).

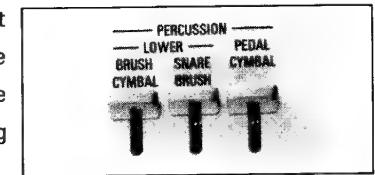


Photo shows EX-1.

## REPEAT SPEED

This applies a clear intermittent tone to the Upper Keyboard Orchestra tone. The nearer towards you the Repeat Speed Lever is set, the shorter the intermittent sound obtained. It is particularly effective with Banjo.

## WAH-WAH (FOOT SWITCH) EFFECT

By setting the Wah-Wah tablet and operating the foot switch, a fantastic coloration change can be produced. The Wah-Wah effect becomes subdued by moving the foot switch to the left, and sharper by moving it to the right.

- Foot Switch operation is commenced by forcibly pushing down the Expression Pedal to the left or right.

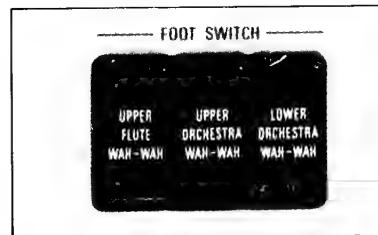
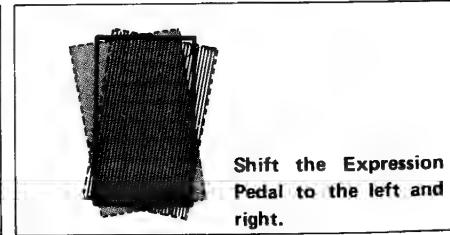


Photo shows EX-1.



## COUPLER

### (1) UPPER PLUS LOWER ORCHESTRA

When this tablet is set, Lower Keyboard Orchestra can be duplicated on Upper Keyboard to produce a deeper, fuller tone. Tone pitch effects of the Lower Keyboard to be reproduced (Glide, Attack Pitch, Transposition, Celeste, vibrato, etc.) are controlled by the Upper Keyboard controls. However, such effects as Bright, Volume, Sustain, Tremolo, etc., of the Lower Keyboard are adjusted by the Lower Keyboard controls. Lower Keyboard tone remain Flute tone only, when the orchestra is coupled to upper.

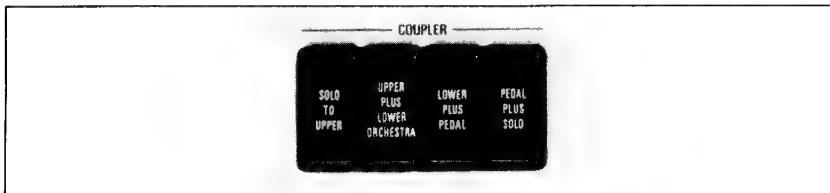


Photo shows EX-1

### (2) LOWER PLUS PEDAL

When this function is employed all Pedal Keyboard voices become playable on the first 25 notes of the Lower Keyboard. At this point, Pedal Keyboard functions are discontinued.

### (3) SOLO TO UPPER (EX-1 only)

Solo Keyboard tones can be produced within the range of C<sub>1</sub> ~ C<sub>4</sub> of the Upper Keyboard. Effect and Control are controlled by the Solo Keyboard controls. Note when more than one key is pressed on the Upper Keyboard, while Solo to Upper is in use, the top note will sound from the solo voice, and the underlying tone will come from the Upper Keyboard.

S.K.	U.K.	Tone Produced (Solo note)
C <sub>4</sub>	C <sub>3</sub>	C <sub>4</sub> tone
C <sub>2</sub>	C <sub>3</sub>	C <sub>3</sub> tone
C <sub>1</sub>	C <sub>2</sub>	C <sub>2</sub> tone

### (4) PEDAL PLUS SOLO (EX-1 only)

By setting this tablet and depressing the Pedal key, the Solo Keyboard

tones can be duplicated on the Pedal Keyboard. At this time, Solo Keyboard notes will not sound.

#### Note -----

- When the Lower Plus Pedal tablet is ON, no sound will be produced even when the Pedal key is depressed.

### SUSTAIN, PERCUSSIVE DECAY, RESPONSE

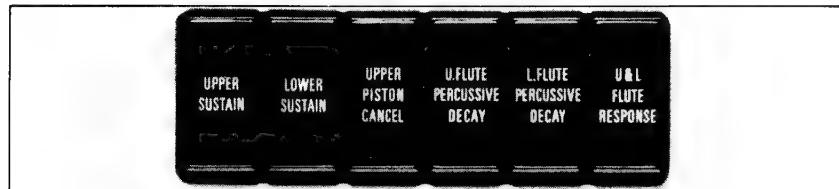


Photo shows EX-1

#### ● SUSTAIN

First set the Sustain length by the Sustain Lever and then set the Upper or Lower Sustain tablet.

#### ● UPPER PISTON CANCEL: Please refer to page 15.

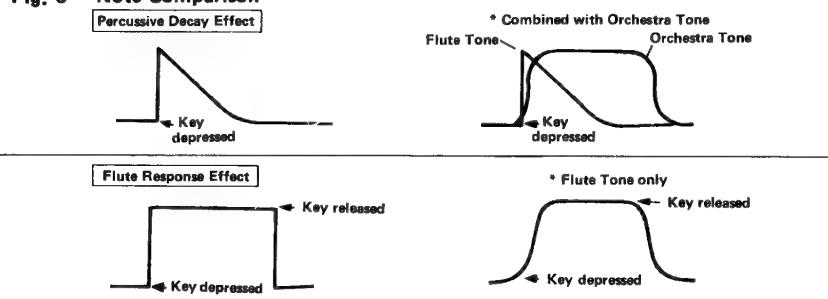
#### ● PERCUSSIVE DECAY

Flute tones can be sustained after the keys are released, by setting this tablet. Used in combination with Orchestra tones, a particularly intriguing effect can be obtained. Sustain time can be adjusted by the Sustain Lever.

#### ● FLUTE RESPONSE

The rise and fall of flute tones are normally delayed. However, when the Flute Response tablet is set the pace is quickened.

Fig. 6 Note Comparison



## GLIDE, DAMPER (FOOT SWITCH EFFECT)

### • UPPER GLIDE

This effect is produced by lowering the note a semitone. The Glide effect can be used to imitate a Western or Hawaiian guitar. The return time of the note is set in advance by the Upper Glide Lever (common with Attack Pitch Lever). Once it is put into operation, if the Foot Switch is operated while a key is depressed during play, the note will be lowered by a semitone immediately. When the Foot Switch is cancelled, the note returns to its original position.

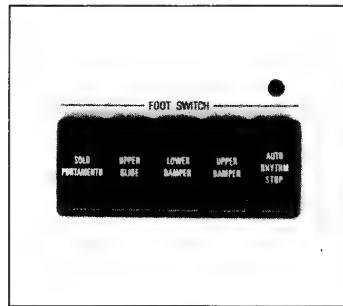
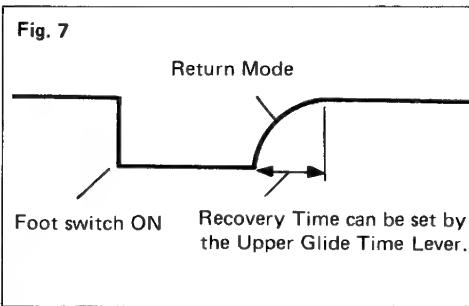


Photo shows EX-1



### • DAMPER

An optional trailing note can be made during performance common to both Upper and Lower Keyboards. For the Damper effect, the Damper tablet should be put on and the Foot Switch used. In this case, Damper action will cancel out the Sustain effect. Operate the Foot Switch while the Damper tablet is on to achieve a trailing note through the Damper effect.

- For Solo Portamento, explanation is provided on page 12 and Auto Rhythm Stop on page 16.

#### Note----

- Vibrato effect will not be produced while Glide is on.
- If both the Vibraphone Lever and Damper tablet are on, the Upper Keyboard tone will be cut as soon as the key is released. If, however, the Foot Switch is on, the tone returns to its original function. The Damper effect is not connected with the Chimes.

## TREMOLO/CHORUS

Tremolo can be applied to Flute tones and Orchestra tones for both Upper and Lower Keyboards respectively.

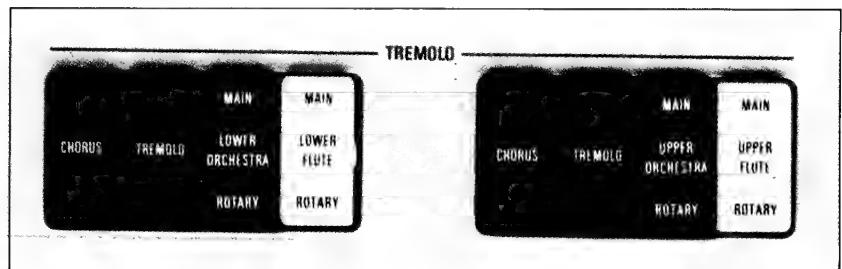


Photo shows EX-1

## BRILLIANCE

This will effect all Upper and Lower Keyboard voices. The lower the lever is set, the more pronounced the effect produced.

## PEDAL DYNAMIC RANGE CONTROL

When you wish to accentuate the Pedal Keyboard notes from the overall Electone sound, depress this button. In this case, since this control volume is limited to the maximum level of the Expression Pedal volume, it varies within smaller range than usual.

Note: This effect does not affect the Percussion of Pedal Keyboard.

## PITCH CONTROL

This is located to the upper right side of the Tone Preset Board and makes it easy to carry out pitch adjustment in case of ensemble with other musical instruments. The pitch is raised by turning it to the right and is lowered by turning it to the left (U.L.P. only).

## EXPRESSION PEDAL

This pedal is perfectly balanced, in that you may release your foot at any given volume level and it will remain in this position until change (very useful for two pedal foot work).

## 2. SOLO KEYBOARD (EX-1 only)

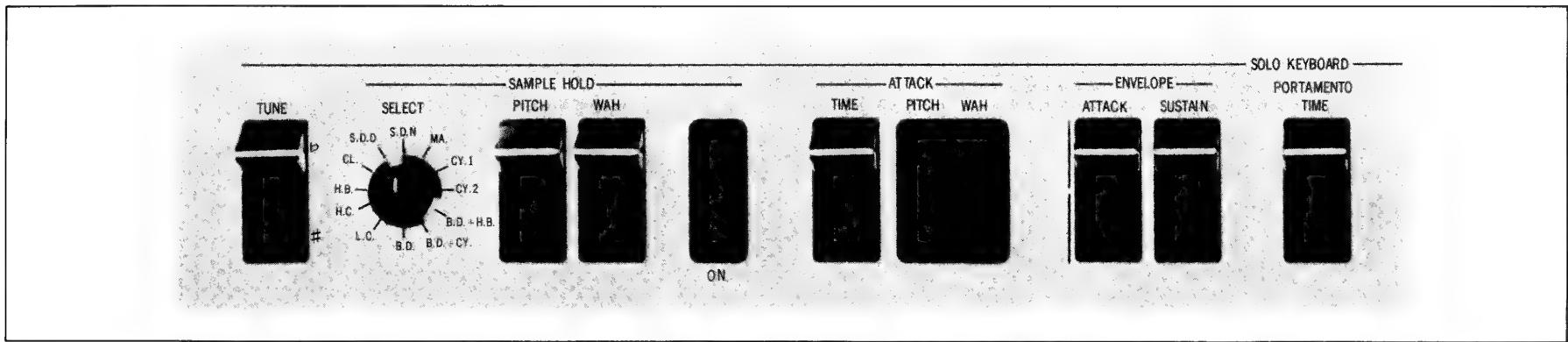


Photo shows EX-1

### ATTACK

#### • PITCH

With this effect, the instant the key is depressed, the pitch is automatically lowered and gradually returns to its previous pitch. The degree the note is to be lowered is preset, and the nearer towards you the time is set, the slower the return time.

#### • WAH

This gives a Wah-Wah effect to Solo Keyboard tones the instant the key is depressed. The nearer towards you the Time Lever is set, the slower the return time.

### ENVELOPE

This controls the duration of rising (Attack) and attenuation (Sustain) of sounds. The nearer towards you the Attack Lever is set, the more rapid the initial of the sound becomes and vice versa. Normal setting is in the center. The nearer towards you the Sustain Lever is set, the longer the duration of the sustain length.

### PORTAMENTO

The Portamento effect changes the pitch smoothly (continuously) when moving from one note to another. The nearer towards you the lever is set, the longer the pitch variation duration (time required for transition of pitch). When the Time Lever is set in combination with the Solo Portamento tablet, it is possible to achieve a Portamento effect at will by the Foot Switch during play.

### TUNE

This adjusts the pitch of Solo Keyboard notes. The nearer towards you the lever is set, the higher the pitch becomes.

### TOUCH (CONTROL)

Vibrato and Wah-Wah effects can be obtained through sideways (lateral) movement of the fingers on the Solo Keyboard. The nearer towards you the Depth Lever is set, the deeper the effect obtained.

- For SAMPLE HOLD, explanation is given on page 17.

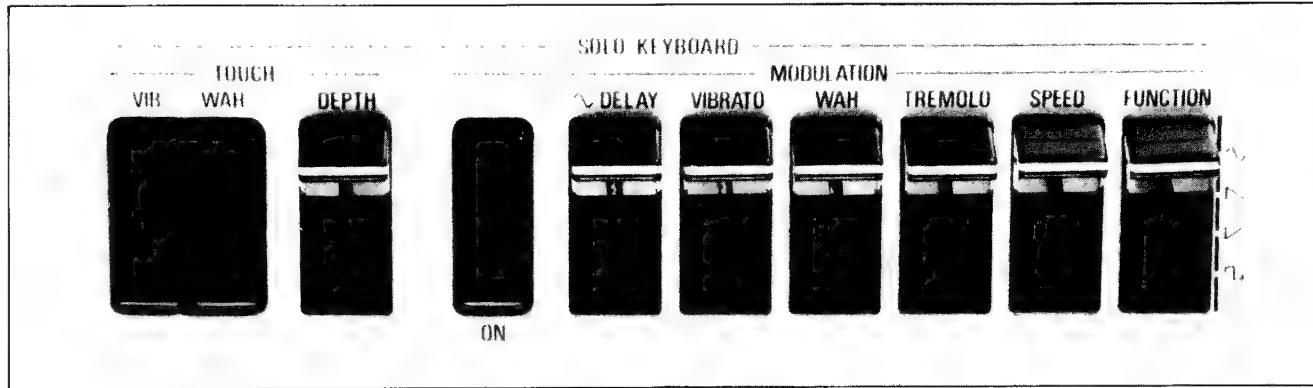


Photo shows EX-1

## MODULATION

By turning Modulation on, the Solo Keyboard can be given such effects as Vibrato, Wah-Wah and Tremolo. The speed and also the modulation wave patterns of these effects can also be set. In addition, in the case of a sine wave curve, it is possible to regulate (or delay) the time required for creating these effects.

Following is an explanation of the function of each lever:

### • Vibrato

The pitch is changed in accordance with voltage. The further towards you this lever is set, the deeper the vibrato effect obtained.

### • Wah

This lever changes the cut off frequency according to voltage. The further towards you the lever is set, the deeper the Wah-Wah effect obtained.

### • Tremolo

This lever alters the amplitude ( volume width ) by the voltage. By moving the lever towards you, a deeper tremolo effect is obtained.

### • Speed

The speed of Vibrato, Wah-Wah, and Tremolo can be increased by moving this lever towards you.

The Speed Lever is generally set in center position.

### • Functions of Modulation Initials

The modulation wave pattern can be selected to create these three effect.

~ (Sine wave): This wave gives an undulating smooth effect.

△ (Saw-tooth wave): This wave gives a quick-starting effect.

▽ (Reversed saw-tooth wave): This wave produces a reversed saw-tooth wave effect.

□ (Square wave): This wave produces a square, angular effect.

### • ~ Delay

This wave is obtained only when the function is a sine wave. The further towards you this lever is set, the more time elapses before the effect is obtained after the key is depressed.

### SOLO DYNAMIC RANGE CONTROL (located on the left side of the Preset Pistons)

Leave this button in depressed mode especially when you wish to emphasize the Solo Keyboard notes out of the overall Electone sound (when you wish to accentuate the volume). However, while the lamp remains lit, the range of change of the Solo Keyboard volume by the Expression Pedal will be narrowed.

# Tone Preset

The Keyboard tones can quickly be switched by pressing the preset pistons during play. Of all the Tone Preset pistons, pistons ①, ② and ③ have previously determined tones already preset. Pistons ④ and ⑤ set the Upper Keyboard tones on the Preset Board. Piston ⑥ sets the tones of the Upper, Lower and Pedal Keyboards on the Preset Board.

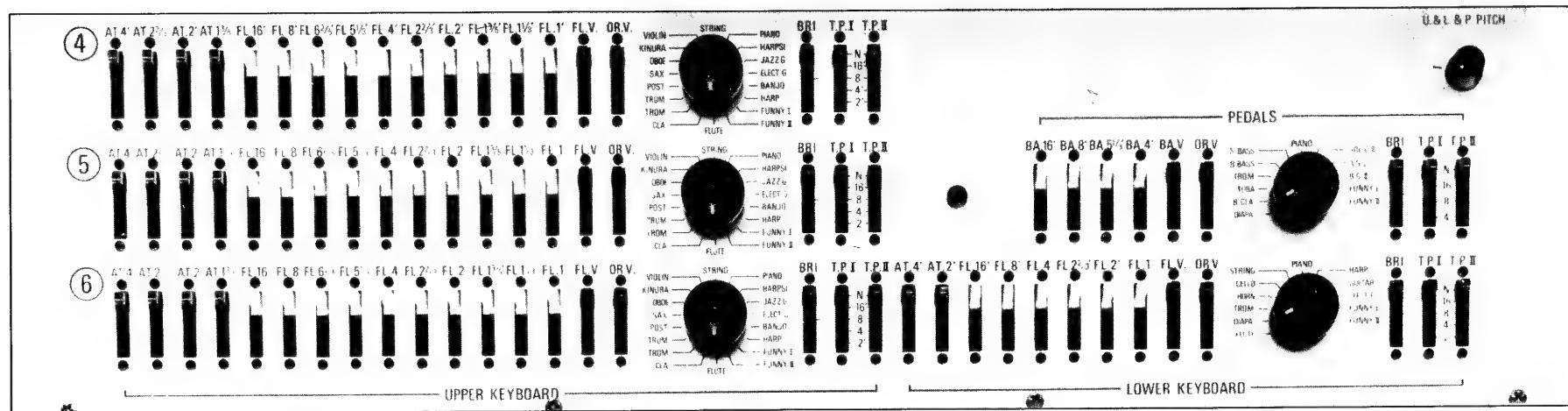
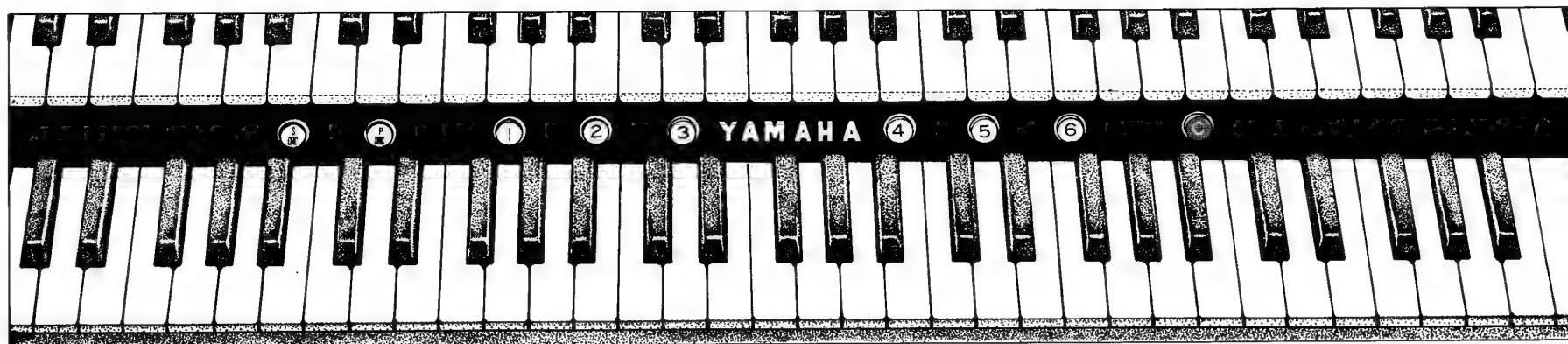


Photo shows EX-1

**Piston ①** produces jazz-like tone with Attack.

**Tone Composition**

Upper: (Flute) 16', 8', 5-1/3' (Attack) 2-2/3'

Lower: (Flute) 8', 4'

Pedals: (Bass) 8'

**Piston ②** features full organ tone with extreme depth.

**Tone Composition**

Upper: (Flute) 16', 8', 4', 2', 1'

Lower: (Flute) 8', 4' (Horn) 8'

Pedals: (Bass) 16'

**Piston ③** gives "theatre sound" tone

**Tone Composition**

Upper: (Flute) 16', 8', 4', 2', 1' (Violin) 8', 4'

Lower: (Flute) 8', 4' (Cello) 8'

Pedals: (Bass) 16', 8' (Bowed Bass) 16'

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**Cancellation of Preset Pistons.**

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The preset tones can be cancelled by pressing Piston (C) on the right. In addition, if you want to make a partial cancellation during your performance and switch to a conventional performance mode, press the Upper Piston Cancel tablet, and then press the Knee Lever so that the Upper Keyboard Preset tones can be partially cancelled. In other words, you can switch the Preset tones and the Control Panel tones in an alternating fashion during your performance.

**Note----**

- Preset Pistons ④ ~ ⑥ will not produce any sound unless the Flute and Orchestra volume levers are also set, on the Setter Board.
- The following effects can be produced when the Tone Preset pistons are pressed: Vibrato, Glide, Attack Pitch, Repeat Speed, Coupler, Wah-Wah, Knee Lever, Expression Pedal, Auto Bass/Chord and Tremolo.
- The Pitch Knob on the Preset Board on the right-hand side adjusts the Electone pitch (except Solo keyboard).

**Piston ④** Only the Upper Keyboard tones can be set on the Preset Board.

**Piston ⑤** Only the Upper Keyboard tones can be set on the Preset Board.

**Piston ⑥** The tones of the Upper, Lower, and Pedal Keyboards can be set on the Preset Board.

# Auto Rhythm/Sample Hold

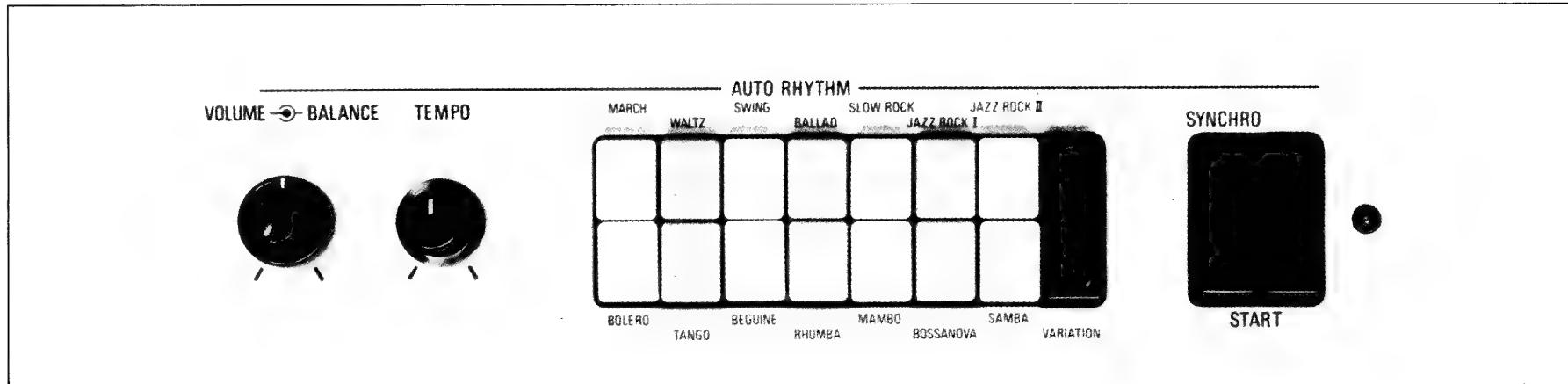


Photo shows EX-1

## AUTO RHYTHM

The Auto Rhythm (Automatic Rhythm Accompaniment) section provides a total of 14 rhythm patterns. The tones of such instruments as cymbals, drums and bongo produce lively, catchy rhythms. By adding more rhythm variations you can create any number of rhythms. You can also combine several rhythms by just pressing the Rhythm Selector the required number of times, and then releasing your finger.

### How to Produce Auto Rhythm

#### (1) Rhythm Start (START)

Turn on the Start Switch on the right-hand. This will automatically begin the rhythm accompaniment on the first beat of every measure.

#### (2) Synchro-Start (SYNCHRO)

Switch on the Synchro-Start and the rhythm will begin as soon as you strike a Lower Keyboard or Pedal key.

#### (3) Rhythm Selector

Set the rhythm of your choice. If you want to switch to another rhythm during play, just press the next rhythm selector and you can automatically cancel the previous rhythm.

#### (4) Tempo Indicator Lamp

The lamp flashes on the first beat of each rhythm.

#### (5) Tempo Control (TEMPO)

The tempo of the Auto Rhythm section can be adjusted.

#### (6) Auto Rhythm Balance (BALANCE)

Turn the knob to the right to accentuate higher (treble) sounds (i.e., cymbals) and to the left for lower (bass) sounds such as bass drum.

#### (7) Auto Rhythm Volume (VOLUME)

Use it to balance the volume of the keyboards and the rhythm section. The volume can be varied by the Expression Pedal.

#### (8) Temporary Rhythm Stop

Switch the Auto Rhythm Stop tablet on in advance to stop the Auto Rhythm during play with the Foot Switch. The original Auto Rhythm can be restarted by operating the Foot Switch again.

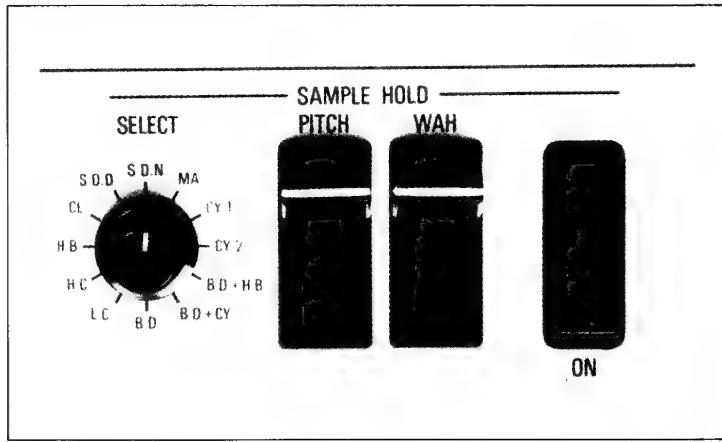


Photo shows EX-1

#### **SAMPLE HOLD (EX-1 only; synchronized with the Auto Rhythm Section)**

The Solo Keyboard sounds and the rhythm patterns in the Auto Rhythm Section (for example, a rhythm pattern produced by bass drums and cymbals) can be synchronized to obtain random pitch and tone variation. At this time, the Solo Keyboard keys do not have to be held down.

##### **● ON Tablet**

First, set the Auto Rhythm. Switch on the ON tablet to prepare the Sample Hold operation.

##### **● SELECT**

This knob selects the rhythm sound timing (the rhythm beating instrument). However, unless the rhythm instrument selected by the knob matches with the rhythm sound components of the preset Auto Rhythm, the Sample Hold can not take effect.

##### **● PITCH**

This enables you to vary the musical interval of the tone held as a sample. The musical interval sound range will expand as the lever is set towards you.

##### **● WAH**

This changes the tone held as a sample.

# Auto Bass /Chord

By just pressing a key on the Lower Keyboard you can create a chord accompaniment from the Lower Keyboard and Pedal keys. In addition, an "Automatic Accompaniment" effect can also be achieved, which is automatically produced in conjunction with the Auto Rhythm Section. However, since the Lower Keyboard accompaniment in this case is provided by the orchestra tone, the Lower Keyboard orchestra tone must be set beforehand. (The Flute tone on the Lower Keyboard can not be used for automatic accompaniment, but it can be effectively used as a continuous background sound). The following items C, E & F are applicable to EX-1.

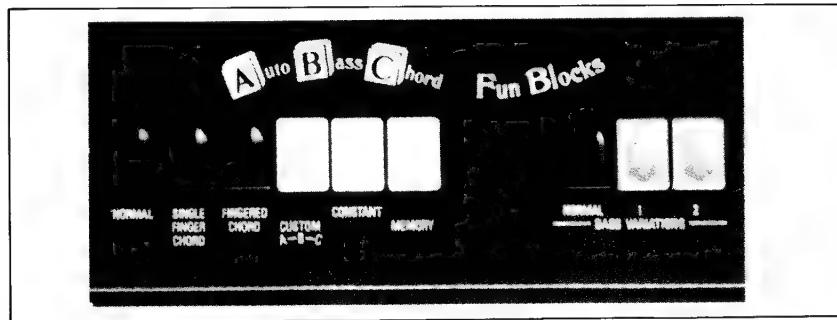


Photo shows EX-2.

## How to set Auto/Bass Chord

- A. When you wish to provide rhythm accompaniment with a single left-hand finger:**
- First set the rhythm of your choice in the Auto Rhythm Section. Next, press the Single Finger Chord button. By just pressing one Lower Keyboard key, you can obtain a major chord accompaniment with the pressed key note as the basic note matching the preset Auto Rhythm. The chord will match the sound range of the pressed key.
  - If you wish to switch to a seventh chord, depress any of the white pedal keys while pressing the Lower key. To obtain a minor chord, depress a black pedal key.

**Fig. 8 Relationship between the pressed key and the accompaniment chord.**

If you press this note on the Lower Keyboard, the resulting automatic accompaniment will be as follows:

Lower Keyboard notes

Pedal Keyboard notes

(This figure shows an example in which the sound range of the center section of the Lower Keyboard is pressed.)

In addition, by leaving the Memory button depressed, the automatic accompaniment will be stored in the memory. In this case, press the key forming the basic note of the chord only when the accompaniment chord changes.

### B. To obtain a Fingered Chord Rhythm Accompaniment

Set the Auto Rhythm, then depress the Fingered Chord button. If you now press a chord on the Lower Keyboard, you can obtain a rhythm accompaniment matching with this chord. If you leave the Memory button depressed, the bass sound and the Rhythm will be committed to memory.

### C. To Obtain Automatic Accompaniment for Lower and Pedal Keyboard Notes

Push the Custom button. By leaving this button depressed, the Lower Keyboard notes (orchestra tones) will be provided with an accompaniment matching the chord held down. Similarly, the pedal notes will have an automatic chord accompaniment with the depressed pedal note as the basic note. In this case, the Pedal Key notes will vary in such a way that when the key pressed on the Lower Keyboard is major, the Pedal Key note will be major; when minor it will be minor.

In addition, if you desire the left-hand accompaniment to be in free pattern mode instead of automatic accompaniment, you can play freely by setting the Lower Keyboard notes to the Flute tones alone. The bass notes can be committed to memory by pressing the Memory button at the same time.

#### D. To Cancel Auto Rhythm Synchronization

Press the Constant button. The Constant button is used with either Single Finger Chord or Fingered Chord to cancel the synchronization with the Auto Rhythm. In this case, both the Lower Keyboard and Pedal Keyboard notes will be continuous sounds.

**Note:** If the Auto Rhythm is set by the Synchro Start, both the Auto Bass/Chord and the Auto Rhythm can be stopped by releasing the Lower Keyboard. They can be started by pressing the Lower key again.  
(In case of Custom/ABC, the pedal keys can also be used).

#### E. To Obtain Bass Variations

By setting the Bass Variation buttons to Normal at the time of automatic accompaniment, a Bass pattern/preset according to the kind of rhythm can be obtained. With this Bass pattern, by setting one or two of the Bass Variation buttons, a “walking chord” effect can be obtained from the pedal key notes (the Bass pattern) as in the following examples:

Fig. 9 Example 1

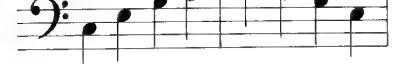
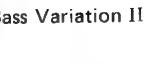
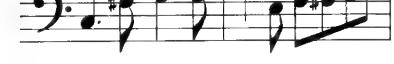
<p>Change in Swing Bass pattern (C Chord)</p>  <p>By setting this button</p> <p>Rhythm Selector Swing</p>	 <p>Rhythm Selector Swing</p>	 <p>Rhythm Selector Swing</p>	 <p>Rhythm Variation</p>	<table border="0"> <tr> <td>N</td> <td>I</td> <td>II</td> </tr> </table>	N	I	II	 <p>Bass Variation Normal</p>	 <p>Bass Variation II</p>	 <p>Bass Variation I</p>	<p>Bass Pattern</p>   
N	I	II									

Fig. 10 Example 2

<p>Change in Jazz Rock 1 Bass pattern (C Chord)</p>  <p>By setting this button</p> <p>Rhythm Selector Jazz Rock 1</p>	 <p>Rhythm Selector Jazz Rock 1</p>	 <p>Rhythm Selector Jazz Rock 1</p>	 <p>Rhythm Selector Jazz Rock 1</p>	 <p>Rhythm Selector Jazz Rock 1</p>	 <p>Rhythm Selector Jazz Rock 1</p>	<table border="0"> <tr> <td>N</td> <td>I</td> <td>II</td> </tr> </table>	N	I	II	 <p>Bass Variation Normal</p>	 <p>Bass Variation I</p>	 <p>Bass Variation II</p>	  
N	I	II											

#### F. To Play Without Automatic Accompaniment, in the Conventional Way

Be sure to press the Auto Bass/Chord Normal button. Unless this button is depressed, the Pedal Keys will not produce any sound.

#### Foot Switch

During play with the Auto Rhythm Stop tablet on, you can stop automatic accompaniment by operating the Foot Switch with your toe. You can then restart the original automatic accompaniment by operating the Foot Switch again.

# Auto Arpeggio

Auto Arpeggio gives a certain grace note effect with "arpeggio", by repeatedly returning to the keyed notes. The Auto Arpeggio has three functions. It can be used to create a linkage with Auto Rhythm, it can retain its independence without causing any linkage (Free), and it can create a linkage with the Auto Bass/Chord. The Auto Arpeggio affects only the Lower Keyboard and the playing technique requires the notes to be kept depressed.

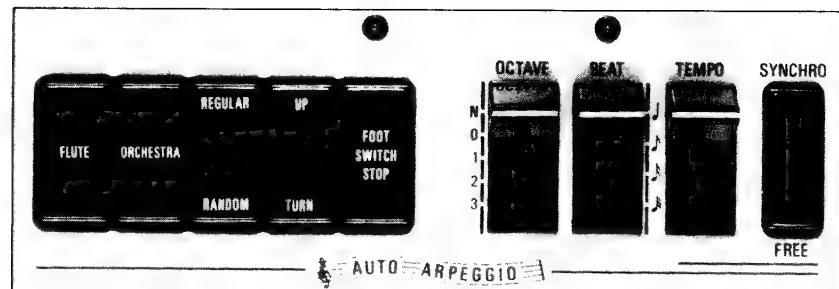


Photo shows EX-1.

## Explanation on Arpeggio Functions

### 1. FLUTE and ORCHESTRA Tablets

Arpeggio effect can be achieved separately on Flute, Attack and Orchestra tones. By combined use of the two tablets, Arpeggio effect can be obtained with both tones.

### 2. SYNCHRO and FREE Tablets

When you do not wish to create a linkage with Auto Rhythm, set this tablet to Free.

### 3. REGULAR and RANDOM Tablets

Arpeggio effect in Regular Mode

The Regular Mode will repeat each of the keyed notes separately. When more than two keys are pressed, repetition will begin from the lowest keyed note. The random function duplicates any note sequence played manually on the Lower Keyboard.

#### Arpeggio effect in REGULAR Mode

This allows the replaying of notes retaining their original timing and order (that is, notes are kept in the same condition as they were played). This also applies when tremolo, chords and "arpeggio" are played.

Fig. 11 • For example, even if the keys are pressed in the following order:

- The lowest keyed note will sound first and each sound will be repeated separately.



Condition: Octave lever 0; Beat lever J

Fig. 12

Condition	Keyed Notes (example)	Sound to be Replayed in Random Mode
Random Tablet - ON Free Tablet - ON Octave Lever - N		<img alt="Treble clef staff with notes G4, A4, B4, C5, D5, E5, F5, G5, A5, B5, C6, D6, E6, F6, G6, A6, B6, C7, D7, E7, F7, G7, A7, B7, C8, D8, E8, F8, G8, A8, B8, C9, D9, E9, F9, G9, A9, B9, C10, D10, E10, F10, G10, A10, B10, C11, D11, E11, F11, G11, A11, B11, C12, D12, E12, F12, G12, A12, B12, C13, D13, E13, F13, G13, A13, B13, C14, D14, E14, F14, G14, A14, B14, C15, D15, E15, F15, G15, A15, B15, C16, D16, E16, F16, G16, A16, B16, C17, D17, E17, F17, G17, A17, B17, C18, D18, E18, F18, G18, A18, B18, C19, D19, E19, F19, G19, A19, B19, C20, D20, E20, F20, G20, A20, B20, C21, D21, E21, F21, G21, A21, B21, C22, D22, E22, F22, G22, A22, B22, C23, D23, E23, F23, G23, A23, B23, C24, D24, E24, F24, G24, A24, B24, C25, D25, E25, F25, G25, A25, B25, C26, D26, E26, F26, G26, A26, B26, C27, D27, E27, F27, G27, A27, B27, C28, D28, E28, F28, G28, A28, B28, C29, D29, E29, F29, G29, A29, B29, C30, D30, E30, F30, G30, A30, B30, C31, D31, E31, F31, G31, A31, B31, C32, D32, E32, F32, G32, A32, B32, C33, D33, E33, F33, G33, A33, B33, C34, D34, E34, F34, G34, A34, B34, C35, D35, E35, F35, G35, A35, B35, C36, D36, E36, F36, G36, A36, B36, C37, D37, E37, F37, G37, A37, B37, C38, D38, E38, F38, G38, A38, B38, C39, D39, E39, F39, G39, A39, B39, C40, D40, E40, F40, G40, A40, B40, C41, D41, E41, F41, G41, A41, B41, C42, D42, E42, F42, G42, A42, B42, C43, D43, E43, F43, G43, A43, B43, C44, D44, E44, F44, G44, A44, B44, C45, D45, E45, F45, G45, A45, B45, C46, D46, E46, F46, G46, A46, B46, C47, D47, E47, F47, G47, A47, B47, C48, D48, E48, F48, G48, A48, B48, C49, D49, E49, F49, G49, A49, B49, C50, D50, E50, F50, G50, A50, B50, C51, D51, E51, F51, G51, A51, B51, C52, D52, E52, F52, G52, A52, B52, C53, D53, E53, F53, G53, A53, B53, C54, D54, E54, F54, G54, A54, B54, C55, D55, E55, F55, G55, A55, B55, C56, D56, E56, F56, G56, A56, B56, C57, D57, E57, F57, G57, A57, B57, C58, D58, E58, F58, G58, A58, B58, C59, D59, E59, F59, G59, A59, B59, C60, 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D138, E138, F138, G138, A138, B138, C139, D139, E139, F139, G139, A139, B139, C140, D140, E140, F140, G140, A140, B140, C141, D141, E141, F141, G141, A141, B141, C142, D142, E142, F142, G142, A142, B142, C143, D143, E143, F143, G143, A143, B143, C144, D144, E144, F144, G144, A144, B144, C145, D145, E145, F145, G145, A145, B145, C146, D146, E146, F146, G146, A146, B146, C147, D147, E147, F147, G147, A147, B147, C148, D148, E148, F148, G148, A148, B148, C149, D149, E149, F149, G149, A149, B149, C150, D150, E150, F150, G150, A150, B150, C151, D151, E151, F151, G151, A151, B151, C152, D152, E152, F152, G152, A152, B152, C153, D153, E153, F153, G153, A153, B153, C154, D154, E154, F154, G154, A154, B154, C155, D155, E155, F155, G155, A155, B155, C156, D156, E156, F156, G156, A156, B156, C157, D157, E157, F157, G157, A157, B157, C158, D158, E158, F158, G158, A158, B158, C159, D159, E159, F159, G159, A159, B159, C160, D160, E160, F160, G160, A160, B160, C161, D161, E161, F161, G161, A161, 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D304, E304, F304, G304, A304, B304, C305, D305, E305, F305, G305, A305, B305, C306, D306, E306, F306, G306, A306, B306, C307, D307, E307, F307, G307, A307, B307, C308, D308, E308, F308, G308, A308, B308, C309, D309, E309, F309, G309, A309, B309, C310, D310, E310, F310, G310, A310, B310, C311, D311, E311, F311, G311, A311, B311, C312, D312, E312, F312, G312, A312, B312, C313, D313, E313, F313, G313, A313, B313, C314, D314, E314, F314, G

#### 4. TEMPO Lever

This lever controls the Arpeggio speed and is used in conjunction with the Free tablet. Tempo increases the more the lever is pulled towards you (Tempo at time of Synchro mode is linked with Tempo volume of the Auto Rhythm).

#### 5. BEAT Lever

The mood changes considerably with variation of beat for the same tempo arpeggio. The duration of the arpeggio notes can be set with this lever.

#### 6. OCTAVE Lever

This lever controls the range of octaves through which the arpeggio effect is to occur. The following diagram indicates how arpeggio effects are expressed within any sound range, according to the position of the lever. When the lever is in N position, the sound range differs in relation to other tablets (Synchro or Random).

Fig 13

The diagram illustrates the Octave Lever settings and their corresponding arpeggio ranges:

- OCTAVE Lever settings:**
  - N (Normal): Notes keyed on lower keyboard (Bass clef, 4 notes).
  - 0: Upper 3 octaves activated (With March, one Upper Octave; with Waltz, 2 Upper Octaves activated).
    - (1) When Random tablet is set in Synchro mode (play linked with Auto Rhythm):
      - Upper 3 octaves are activated (With March, one Upper Octave, and with Waltz, 2 Upper Octaves are activated.)
      - Notes keyed on lower keyboard (Bass clef, 4 notes).
    - (2) Using a combination of tablets other than those mentioned in (1):
      - The same note is repeated.
      - Musical example: Treble clef, 4 notes per octave, with notes repeated across three octaves.
  - 1: Notes keyed on middle keyboard (Treble clef, 4 notes).
  - 2: Notes keyed on upper keyboard (Treble clef, 4 notes).
  - 3: Notes keyed on highest keyboard (Treble clef, 4 notes).

**Musical Examples:**

  - Lever setting position N:** Notes keyed on lower keyboard (Bass clef, 4 notes).
  - Lever setting position .0:** Notes keyed on lower keyboard (Bass clef, 4 notes).
  - Lever setting position .1:** Notes keyed on middle keyboard (Treble clef, 4 notes).
  - Lever setting position .2:** Notes keyed on upper keyboard (Treble clef, 4 notes).
  - Lever setting position .3:** Notes keyed on highest keyboard (Treble clef, 4 notes).

## 7. UP·TURN Tablet

This tablet selects a repetition of the flow of arpeggio notes.

When this tablet is UP, the arpeggio effect occurs from lower to upper, within the range of keyed notes set by the Octave Selector. When it is set on TURN, the arpeggio rises as far as the highest range of keyed notes set by the Octave Selector, and then returns to the range of keyed notes.

Fig. 14

Notes keyed on Lower Keyboard



Condition:

REGULAR/RANDOM tablet . . . . RANDOM

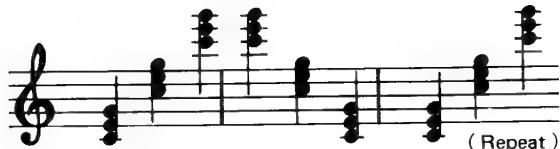
SYNCHRO/FREE tablet . . . . . FREE

OCTAVE lever . . . . . Set at 2

**UP**



**TURN**



## 8. FOOT SWITCH STOP Tablet

When the Foot Switch is operated with this tablet ON, the arpeggio effect will be cancelled. If the Foot Switch is operated again, the original arpeggio effect recurs.

Condition:

REGULAR/RANDOM tablet . . . . REGULAR

SYNCHRO/FREE tablet . . . . . FREE

OCTAVE lever . . . . . Set at 1

**UP**



**TURN**



## VARIOUS AUTO ARPEGGIO STYLES

### 1. Free Playing of Arpeggio

(The arpeggio effect is not connected to the Auto Rhythm.)

- (1) Use the Flute, Attack or Orchestra tablets to decide the arpeggio tone.
- (2) Depress Free tablet.
- (3) Decide whether arpeggio effects are to be Regular or Random.
- (4) Decide whether effect is to be Up or Turn.
- (5) Decide Tempo.
- (6) Decide Beat.
- (7) Set Octave tablet.

### 2. Arpeggio in Auto Rhythm

(Linked with Auto Rhythm)

- (1) First, set Auto Rhythm.
- (2) Preset Auto Rhythm Synchro Start to start Auto Rhythm and Auto Arpeggio at the same time (at the same tempo). Leaving the Synchro Start tablet off, the Auto Arpeggio can be commenced in time with the Auto Rhythm by depressing the keys on the first beat.
- (3) Decide the tone to be used by selecting Flute or Orchestra tablets.
- (4) Decide whether arpeggio effect will be Random or Regular.
- (5) Decide whether arpeggio effect is to be Up or Turn.
- (6) Decide the beat.
- (7) Set the Octave.

### 3. Arpeggio in Auto Bass/Chord

(Linked with Auto Bass/Chord)

- (1) Auto Bass Chord has priority when used in conjunction with Auto Arpeggio with orchestra tones. To obtain Arpeggio effect as well, preset the Flute tone and set Flute tablet on.
- (2) Set Auto Rhythm and press Synchro Start tablet.
- (3) Decide whether arpeggio effects are to be Regular or Random.
- (4) Decide whether arpeggio effects are to be Up or Turn.
- (5) Decide the beat.
- (6) Set the Octave.
- (7) When you wish to commit the arpeggio effect to memory, push the Single Finger Chord button, depress the Memory button and then play.

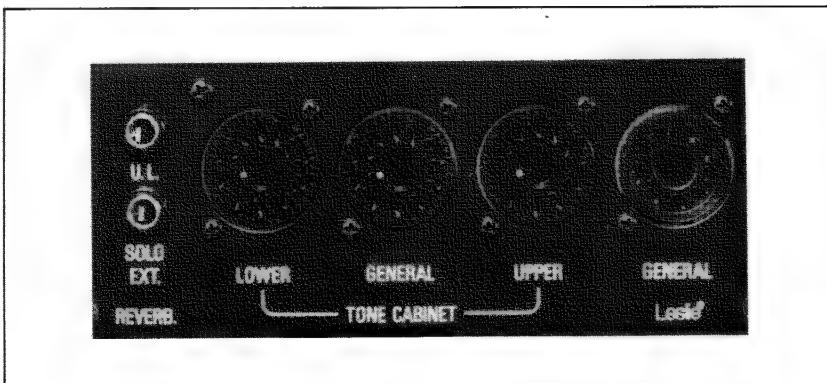
#### Note-----

- With the Auto Arpeggio effect, the Flute tone on the lower keyboard gives attenuation effect.
- Arpeggio effect can be given to Flute, Attack and Orchestra tone simultaneously.
- When producing Auto Arpeggio with orchestra tones, take those tones having the natural diminution such as piano or harpsichord to get most effective arpeggio.

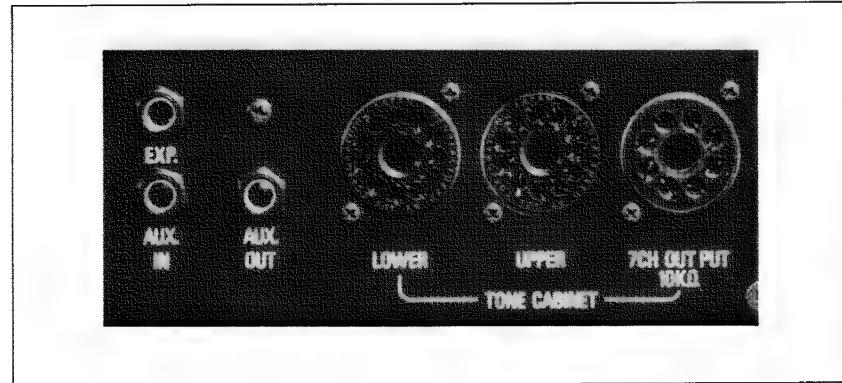
# Tone Cabinet Connections and Auxiliary Terminals

## EX-1 Tone Cabinet Connectors

Connectors are located under both sides of the EX-1 main body, either of which can be used. Connection is possible with the new-type tone cabinet with built-in electronic tremolo effect and the number of cabinets can freely be increased in accordance with the size of the hall.



EX-1 Lower left side



EX-1 Lower right side

### In Case of Two Tone Cabinets

Two tone cabinets are connected with the Upper and Lower terminals. The tone signals of the Upper, Pedal and Solo Keyboards, Percussion and Rhythm are issued from the Upper terminal, while from the Lower terminal, tone signals from the Lower, Pedal and Solo Keyboards as well as the percussion and rhythm, come out.

### In Case of One Tone Cabinet

A single tone cabinet is connected to the General Terminal. In this case, the Upper, Lower, Pedal and Solo Keyboards, Percussion and rhythm sounds are issued.

### 7CH OUTPUT Terminal

Tone signals from the Upper, Lower, Pedal, Solo Keyboard and Rhythm (with the Tremolo effect as to the Upper and Lower) can be issued separately from this terminal. It can be used as a LINE OUT terminal for recording, etc.

### GENERAL Leslie Terminal

This can be directly connected with a Leslie speaker (700-705-710-720 type). 700 and 710 are direct plug 9 pin, 705 and 720 use 9 to 11 pin adaptor.

### **EX-2 Tone Cabinet Connectors**

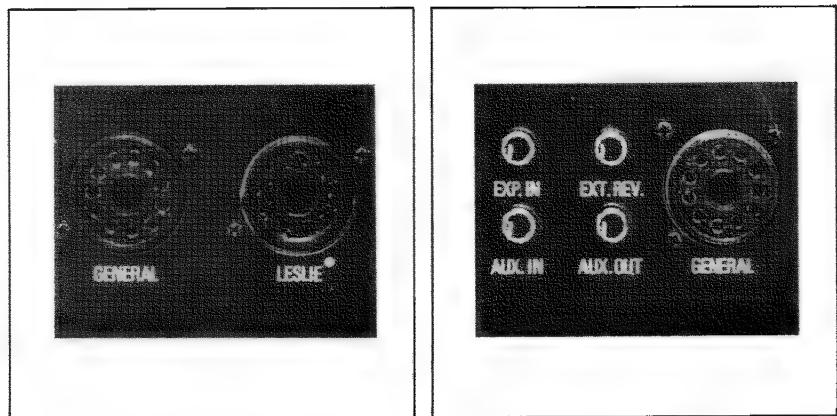
Located under both sides of the EX-2 main body, either connectors can be used. Connection is possible with the new-type tone cabinet with built-in electronic tremolo effect and the number of tone cabinets can be freely increased in accordance with the size of the hall.

#### **GENERAL Terminal**

This can be connected with the new-type tone cabinet with built-in electronic tremolo effect. Tremolo/chorus effect can be independently issued to Flute tone and Orchestra tone respectively.

#### **LESLIE Terminal**

This can be directly connected with a Leslie speaker (700-705-710-720).  
700 and 710 are direct plug 9 pin, 705 and 720 use 9 to 11 pin adaptor.



(EX-2 lower left side)

(EX-2 lower right side)

### **AUXILIARY TERMINALS**

The Light switch and Headphone jack auxiliary terminals are located under the Electone rack, while other terminals are located under the right (and left) side of the instrument main body.

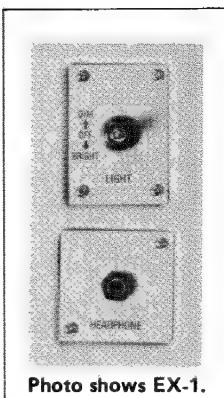


Photo shows EX-1.

#### **•PANEL/PEDAL LIGHT SWITCH**

When the switch is on, a light is lit to illuminate the Electone Keyboards (Manual Keyboards and Pedal Keyboard). In dark places, accurate playing in an intimate atmosphere is possible. When switching towards you, illumination is brightened and in the opposite direction it is subdued.

(EX-1 light is optional.)

#### **•HEADPHONE JACK**

To monitor you play through a headphone, connect it to this jack.

#### **•EXP-IN (EXP LINKING INPUT) Terminal**

If a synthesizer, etc. is connected, it is possible to play by changing the volume with the Electone Expression Pedal.

(Input impedance  $47k\Omega$ , Max. input level  $-19$  dBm)

#### **•AUX-IN (LINE INPUT) Terminal**

By connecting a stereo set or tape recorder to this terminal, it is possible to play in combination with recorded music which issues from the Tone Cabinet.

(Input impedance  $47k\Omega$ , Max. input level  $-19$  dBm)

#### **•AUX-OUT (LINE OUTPUT) Terminal**

This is used when tape recording or connecting with another amplifier for reproduction. (Output impedance  $470\Omega$ , Max. output level  $-6$  dBm).

#### **•EXT-REVERB, U.L./SOLO (EX-1 only)**

This terminal is for connecting an external Reverb Unit, and when inputting Reverb within the main body is OFF. External Reverb must be adjusted with the Reverb lever set in suitable position. Input terminals are classified into one for the Upper and Lower Keyboards (U.L.) and the other for Solo Keyboard (SOLO).

#### **•EXT. REVERB (EX-2)**

This terminal is used to connect an External Reverb Unit and when input, Reverb within the main body is off.

# Instrument Handling and Playing Enjoyment

## How to Mount the Pedal Keyboard

The Pedal Keyboard of the EX-1 and EX-2 is a self-contained unit, and, as such it can be dismounted. The following precautions should be observed when dismounting or mounting the unit.

1. It must always be carried by 2 persons, and under no circumstances should undue force be used.

2. When mounting, follow the direction of the arrow in the illustration, while lifting it out with a smooth, sliding motion.
3. When dismounting, lift it slightly at first, and then draw it out.
4. Be careful not to damage the main body during mounting and dismounting.

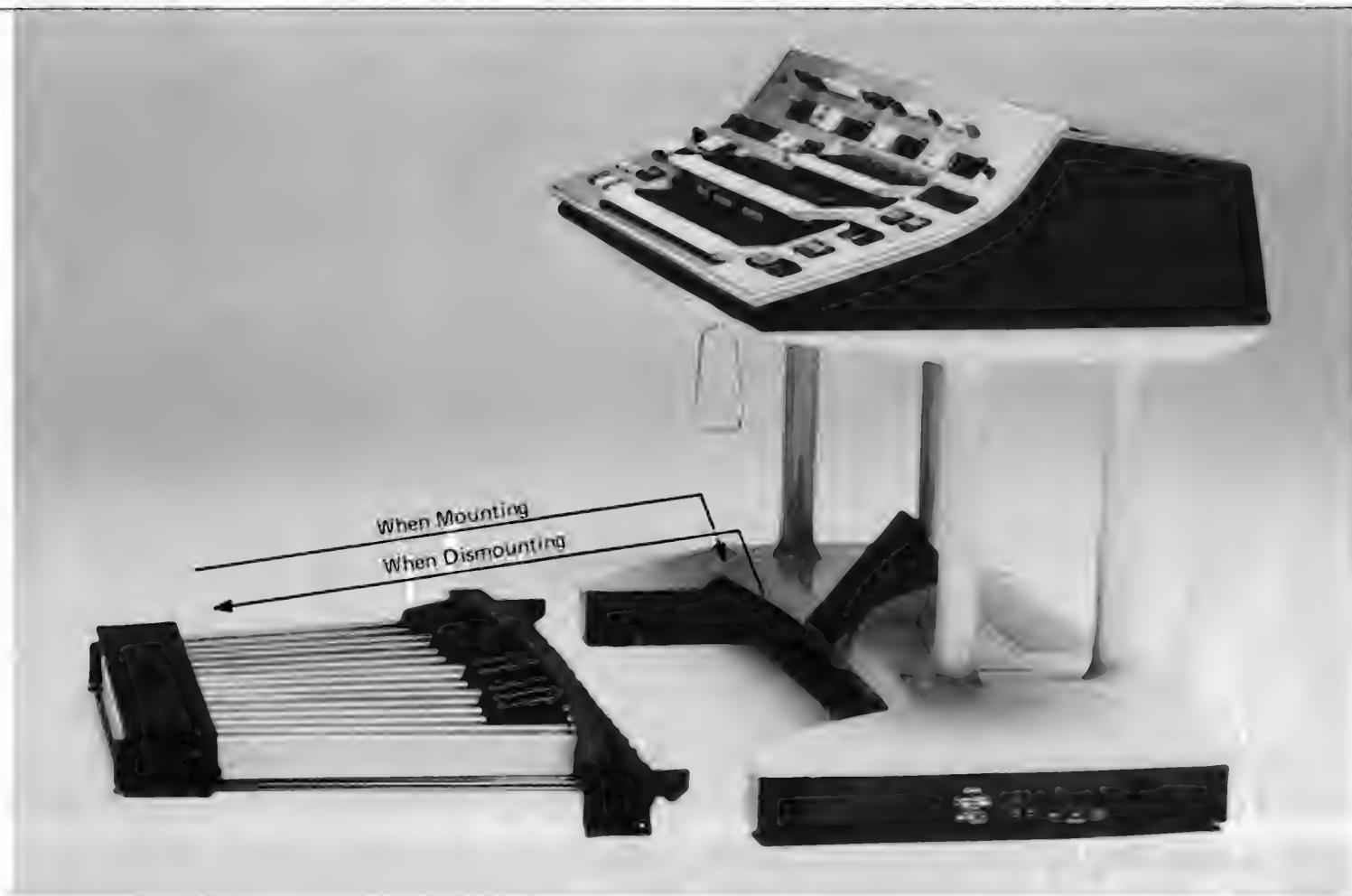


Photo shows EX-1

### Playing Enjoyment

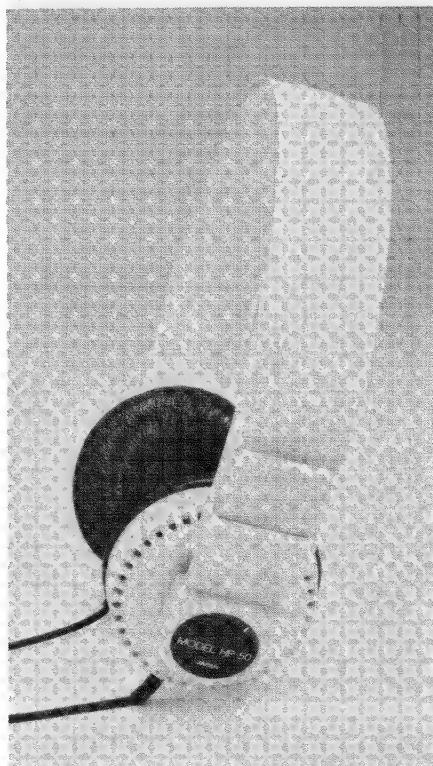
Every Yamaha Electone is equipped with a Headphone jack which can be used to connect a pair of headphones. The Yamaha Ortho Dynamic Headphone (HP-50), specially designed for use with musical instruments, has a light mounting and crystal clear sound and is recommended to fully appreciate the rich, original tone of the EX-1 and EX-2.

Specially for use with Musical Instruments (Monaural)

Ortho Dynamic Headphone

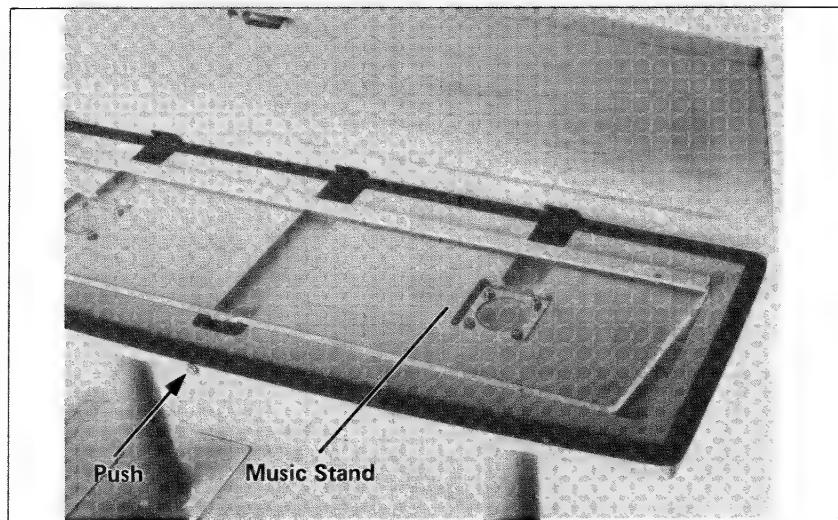
HP-50

Specially for use with Musical Instruments (Monaural)  
Ortho Dynamic Headphone  
HP-50



### Music Stand Installation

The Music Stand for the EX-1 and EX-2 is accommodated in the seat. The EX-1 seat is opened by pushing a button in the front, whereas in the case of the EX-2 it is secured by a screw (reverse side of the seat).



# Following Phenomena are not Troubles

Phenomenon	Cause	Remedy
Instant switch is turned on, a sound is heard.	This is a natural phenomenon resulting from the surge of power in the main amplifier.	No action required.
Even if two Pedal Keyboard keys are pressed, only one tone is produced.	The first note is designed to be deleted the moment another key is depressed so that no dirty tone is produced as a result of mixing the first and later notes, while Pedal Sustain is on.	When two keys are pressed simultaneously, higher note only sounds. (Higher note priority)
Rattling (sympathetic vibration) occurs	The continuous tones of the Electone causes nearby objects (shelves, window panes, etc.) to vibrate.	(1) Reduce volume. (2) Remove resonating objects.
Occasional unpleasant static occurs (scratching noise)	(1) Switching on and off of electrical appliances such as refrigerators, washing machines, etc. (2) Malfunctioning neon signs; use of electric drill	(1) Use power socket as far as possible from the source of noise. (2) Consult your Yamaha Technical Service Center as to the cause in case of doubt.
Radio or T.V. signals are reproduced	There is a powerful radio station transmitter or ham radio operator nearby.	If it continues to be a source of annoyance, consult your Yamaha dealer or Technical Service Center.
Scattering of Keyboard position volume by Tone Lever	It is very difficult to prevent volume scattering of each Keyboard by tone, since this phenomenon is inherent in electronic musical instruments. Your Electone is designed and adjusted to provide trouble-free performance with any tone.	Strength of sound and tone differ greatly in accordance with the location and position of the listener. If it continues to be a source of annoyance, consult your Yamaha Technical Service Center.
Electronic buzzing noise (hum) is heard during practice with headphone	Hum is a troublesome phenomenon which often occurs while playing using headphone. However, sound (including hum) from the speaker of the main body is not a problem.	Insert the Electone main body power source plug into the socket in reverse way.
Pedal notes sound too high. Upper Keyboard's notes too low.	This is especially noticeable when comparing the Electone and piano. Piano notes are combination of harmonics which are influenced by the surrounds, while Electone harmonics are simpler (multiples of the basic tone) requiring the Electone to be adjusted in a different manner at the assembly stage.	

Phenomenon	Cause	Remedy
Noise occurs if vibration and shock are given with power source on.	Vibration is transmitted from the soft spring of the built-in Reverberation device.	(1) Be careful not to give vibration or shock during operation. (2) Install the Electone so that it does not shake. (3) When moving, turn power switch off or Reverb Lever to the left so that no reverb effect is given.
Although Upper Keyboard Orchestra tone is set and 8 notes are pressed, only 7 sound.	Since Orchestra tone produces only 7 notes for Upper and Lower Keyboards respectively, more notes will not be produced if more than 7 keys are depressed.	
Only 3 notes are produced on Lower Keyboard.	The Electone can produce a combined total of 11 notes for both Upper and Lower Keyboards. Thus, when 8 notes are pressed on the Upper Keyboard, the remaining 3 are from the Lower Keyboard.	
A "pop" sounding noise enters when sound is being produced with Flute Response on.	This noise occurs at time of changeover, because sound rising time is shortened.	This Click noise is an intentional effect. It is not suitable for slow tempo passages, but is suited for high tempo, cheerful music.
Beat is heard when the keys of the same pitch of Upper and Lower Keyboards are pressed simultaneously.	The Electone is designed to produce a natural beat by sliding the pitch by +1.6 cent for the Upper Keyboard and -1.6 cent for the Pedal Keyboard on the basis of the Lower Keyboard. Rate of beat differs in accordance with the Keyboard position.	
No sound is heard even if preset pistons (4), (5) and (6) are depressed.	Because Preset pistons (4), (5) and (6) are capable of setting Flute and Orchestra volumes, no sound is generated when volume is set at min. by setting tone only.	
No sound from the Pedal Keyboard is produced at all.	If Coupler tablet of the Lower Plus Pedal is set to ON, no Pedal Keyboard sound is generated at all. If Upper Plus Lower tablet is ON, Orchestra tone on Lower Keyboard is not generated either.	
Bass pattern is irregular when Auto Bass/Chord is used.	Because more than 2 Auto Rhythm buttons are depressed.	The problem will be solved if the buttons are set one by one.
No sound from the Solo Keyboard is produced at all.	If Coupler tablet of the Pedal Plus Solo is set to ON, no Solo Keyboard sound is generated at all.	
Rise of Solo Keyboard note is slower.	Solo Envelope Attack lever is set too far forward.	Set the lever in the center position.

# Specifications

This type refers to EX-1.

This type is common to EX-1 & EX-2.

This type refers to EX-2.

## KEYBOARDS

Solo	37 keys c <sub>1</sub> ~c <sub>4</sub> (C <sub>3</sub> ~C <sub>6</sub> )
Upper	61 keys C~C <sub>4</sub> (C <sub>1</sub> ~C <sub>6</sub> )
Lower	61 keys C~c <sub>4</sub> (C <sub>1</sub> ~C <sub>6</sub> )
Pedal	25 keys C <sub>1</sub> ~c (C <sub>0</sub> ~C <sub>2</sub> )

## TONE LEVERS

Upper	Attack 4' · 2-2/3' · 2' · 1-3/5' Flute 16' · 8' · 6-2/5' · 5-1/3' · 4' · 2-2/3' · 2' 1-3/5' · 1-1/3' · 1'
	Chimes, Vibraphone
Lower	Attack 4' · 2' Flute 16' · 8' · 4' · 2-2/3' · 2' · 1'
Pedals	Bass 16' · 8' · 5-1/3' · 4'

## UPPER ORCHESTRA SECTION

Tone Selectors	Flute, Clarinet, Trombone, Trumpet, Post Horn, Saxophone, Oboe, Kinura, Violin, String, Piano, Harpsichord, Jazz Guitar, Electric Guitar, Banjo, Harp, Funny I, Funny II
Controls	Bright, Transposition I & II (16', 8', 4', 2')

## LOWER ORCHESTRA SECTION

Tone Selectors	Flute, Diapason, Trombone, Horn, Cello, String, Piano, Harp, Guitar, Electric Guitar, Funny I, Funny II
Controls	Bright, Transposition I & II (16', 8', 4', 2')

## PEDAL ORCHESTRA SECTION

Tone Selectors	Diapason, Bass Clarinet, Tuba, Trumbone, Bowed Bass, String Bass, Piano, Harpsichord, Solid Bass, Bass Guitar I, Bass Guitar II, Funny I, Funny II
Controls	Bright, Transposition I & II (16', 8', 4')

## PRESET PISTONS & BOARD

1~3	Upper, Lower, Pedals (Factory Preset)
4~5	Upper, Center Board
6	Upper, Lower, Pedals, Center Board

## ATTACK LEVERS

Upper	Repeat, Length
Lower	Repeat, Length

## VIBRATO LEVERS

Upper	Touch Vibrato, Delay Vibrato, Depth, Speed
Lower	Depth, Speed

## ATTACK PITCH CONTROLS

Upper	ON/OFF, Time Control
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## Lower

ON/OFF, Time Control

## Pedal

ON/OFF, Time Control

## PERCUSSION LEVERS

Lower Brush Cymbal, Snare Brush

Pedals Cymbal

## SUSTAIN CONTROLS

Upper ON/OFF, Flute, Length, Orchestra Length

Lower ON/OFF, Length

Pedals Length

## CELESTE CONTROLS

Upper Flute, Orchestra

Lower Flute, Orchestra

Pedals Bass, Orchestra

## COUPLERS

Solo Plus Upper

Upper Plus Lower (Orchestra)

Lower Plus Pedals

Pedals Plus Solo

## TREMOLO SELECTORS

Upper Flute, Orchestra (Tremolo/Chorus)

Lower Flute, Orchestra (Tremolo/Chorus)

## WAH-WAH SELECTORS

Upper Flute, Orchestra

Lower Orchestra

## OTHER EFFECT SELECTORS

Upper Orchestra Repeat Speed

Upper Flute Percussive Decay

Lower Flute Percussive Decay

Upper & Lower Flute Response

## AUTO RHYTHM SECTION

Rhythm Selectors March, Waltz, Swing, Ballad, Slow Rock,

Jazz Rock I Jazz Rock II, Bolero, Tango,

Bequine, Rhumba, Mambo, Bossanova, Sam-

ba, Variation

Rhythm Controls Rhythm Start, Rhythm Synchro Start,

Rhythm Stop (Foot Switch), Tempo, Vol-

ume, Tone Balance, Tempo Light

## ABC FUN BLOCKS

ABC Selectors Normal, Custom ABC, Memory, Single Fin-  
ger Chord, Fingered Chord, Constant

## Bass Variation Selectors

Normal, 1, 2

## AUTO ARPEGGIO SECTION (LOWER)

Voice Selectors Flute-ON/OFF, Orchestra-ON/OFF

Mode Selectors Regular/Random, Up/Turn, Synchro/Free

Octave Selector N, 0, 1, 2, 3

Beat Selector

Tempo Control

Foot Switch Stop

Tempo Light

Stop Light

## OTHER CONTROLS

Master Volume

Brilliance

Manual Blance

Manual Reverb

Solo Reverb

Pitch Control

Upper Flute Volume

Orchestra Volume

Lower Flute Volume

Orchestra Volume

Pedal Bass Volume

Pedal Orchestra Volume

Pedal Dynamic Range Control Piston

Solo Dynamic Range Control Piston

Foot Switch Control

Upper Glide, Upper Damper, Lower Damper,  
Rhythm Stop, Solo Portamento

Knee Lever

Expression Pedal

Power Switch with Pilot Light

## OTHER FITTINGS

Headphone Jack

Expression Input Jack

External Input Jack

External Output Jack

External Solo Reverb IN-OUT Jack

External Manual Reverb IN-OUT Jack

Pedal Light

Panel Light (Option)

Panel & Pedal Light Switch

Tone Cabinet Connector

## SOLO KEYBOARD SECTION (EX-1 Only)

### KEYBOARDS

37 keys C<sub>1</sub>~C<sub>4</sub>

### TONE SELECTORS

Flute, Clarinet, Trombone, Trumpet, Mute Trumpet, Brueghel Horn, Saxophone, Violin, Harpsichord, Jazz Guitar, Electric Guitar, Double Lead, Funny I, Funny II, Funny III, Funny IV.

### TONE CONTROL LEVERS

Bright, Transposition (32, 16, 8, 4, 2)

### EFFECT LEVERS

**Modulation** ON/OFF Delay, Vibrato, Wah-Wah, Tremolo, Speed, function

**Touch Control** ON/OFF, Vibrato-Wah-Wah

**Sample Hold** ON/OFF-Pitch-Wah-Wah, Rhythm Source Select

**Attack Control** ON/OFF-Pitch-Wah-Wah

**Attack Time**

**Sustain Time**

**Portamento**

### OTHERS

**Tune**

**Solo Volume**

### EX-1

#### Dimensions

**Body Width** 154 cm (60-5/8")

**Height** 114 cm (44-7/8")

132 cm (52") with score stand mounted

**Depth** 80 cm (31-1/2")

**Weight** 220 kg (485 lbs)

**Surface finish** FRP urethane coating

\* **Rated Voltage** AC

Rated Power Consumption 195 W

Rated Frequency 50/60 Hz

### EX-2

#### Dimensions

**Body Width** 152 cm (59-13/16")

**Height** 106 cm (41-3/4")

127 cm (50") with score stand mounted

**Depth** 80 cm (31-1/2")

**Weight** 194 kg (427 lb 11 oz)

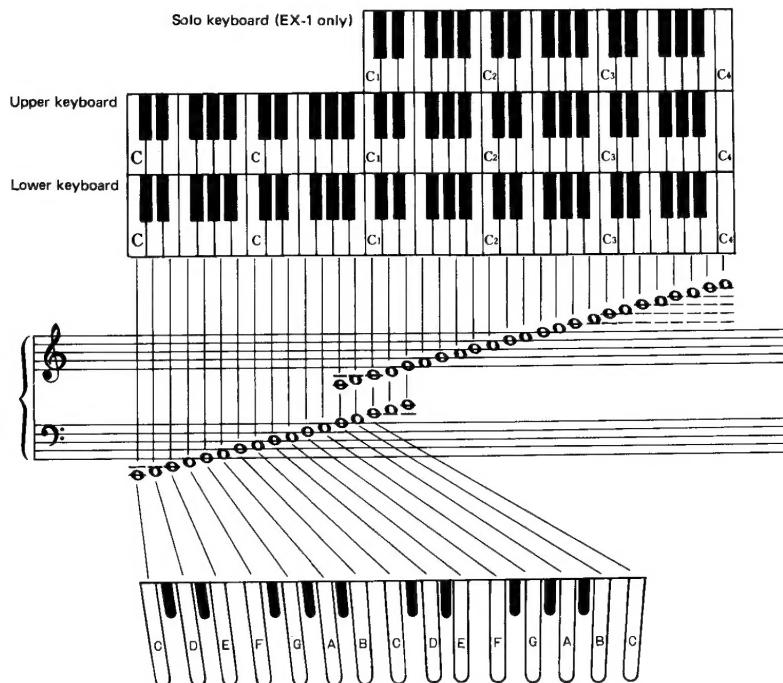
\* **Rated Voltage** AC

Rated Power Consumption 170 W

Rated Frequency 50/60 Hz

*Specifications are subject to change without notice.*

Fig. 15 Tone Ranges



\*Actual sounds produced by the Pedal Keyboard are lower by 1 octave than those indicated (e.g. C1 -- c).

## Special Instructions for British-Standard Model

As the colours of the wires in the mains lead of the apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows.

The wire which is coloured GREEN-and-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol  $\equiv$  or coloured GREEN or GREEN-and-YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

## IMPORTANT

THE WIRES IN THE MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.

GREEN-AND-YELLOW:	EARTH
BLUE:	NEUTRAL
BROWN:	LIVE

## WARNING:

THIS APPARATUS MUST BE EARTHTED.

SINCE 1887



**YAMAHA**

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN